We’ve Got The BRAINS For The FUTURE

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TU Berlin – An Overview

32,000 Students
7 Faculties
115 Courses of Study
315 Professors
20 Junior Professors
2,580 Research Associates
2,147 Staff in Administration, Libraries, Central Institutions and Workshops
15 Habilitations in 2012
461 Doctoral Degrees in 2012
Approximately 150 Trainees each Year in 17 Professions
287.6 Million Euros in State Subsidies for the Year 2013
159.6 Million Euros in External Funding for the Year 2012

October 2013
A PORTRAIT
We’ve Got The Brains For The Future – In The Heart Of Germany’s Capital

With around 32,000 students, circa 100 course offerings and 40 Institutes, the historic Technische Universität Berlin is one of Germany’s largest and most internationally renowned technical universities. Located in Germany’s capital city – at the heart of Europe – outstanding achievements in research and teaching, imparting skills to excellent graduates, and a modern service-oriented administration characterize TU Berlin.

The range of services offered by our seven Faculties serves to forge a unique link between the natural and technical sciences on the one hand, and the planning, economics and social sciences and humanities on the other. This is indeed a significant achievement for any technical university.

These disciplines find concrete expression in around 40 Bachelor’s and 60 Master’s programs. Many of these are indeed unique. TU Berlin is the only university in the capital region offering engineering subjects.

Such scientific achievements are built on basic research in the natural science disciplines of chemistry and physics, and mathematics, in addition to strongly innovation-oriented research in electrical engineering and the computer sciences for instance. TU Berlin has received recognition for outstanding achievements in all these disciplines, for which support is provided by the Excellence Initiative of the German Federal and State Governments, the German Research Foundation (DFG), the European Union, industry and public funding, and whose teams are conducting world-class research. One obvious indication of the university’s performance and dynamic development is the increase in external funding for its research projects from around 80 million euros in 2007, to circa 160 million euros in 2012. For years, TU Berlin has been ranked as one of the top universities in Germany without a medical school.

The fundamental problems facing modern societies and the science community can no longer be assigned to individual disciplines, as transdisciplinary approaches are now required. It is at these very interfaces that TU Berlin sees its bright future and its mission to promote innovative research topics and new degree programs.
BEYOND ITS OWN BORDERS, both domestically and abroad, our university is the motor, initiator and beneficiary of numerous academic and professional networks with partners in science and industry. Strategic alliances and numerous start-up activities serve to promote hands-on knowledge and technology transfer.

Global players such as Siemens, Deutsche Telekom, Daimler, Vattenfall or E.ON are involved in various cooperative projects with our university and actively promote technology and knowledge transfer. The 14 endowed chairs and several affiliated institutes are also reminders of TU Berlin’s excellent extramural reputation. Companies not only provide investments, they also offer hands-on training and support numerous students with scholarships, lecture series, and excellent career opportunities for graduates. The Deutsche Telekom Innovation Laboratories is one outstanding example of such networking. Their mission is to conduct research for the telecommunications company and they sponsor several TU Berlin chairs. The TU Campus has been home to the ‘Labs’ house since 2004, where around 360 experts and scientists from more than 25 nations work under the same roof.
As an important actor in Berlin and Brandenburg’s world-class scientific environment, TU Berlin selectively promotes scientific networking. In addition to their usual academic activities, around 60 of our top-notch researchers exercise managerial functions in extra-mural research institutes. These include the Fraunhofer Society, the Leibniz Association, the Helmholtz Association and other important and publicly-funded research facilities.

THE TU BERLIN ATTACHES GREAT IMPORTANCE to the promotion of science-based start-ups and spin-offs by providing guidance and supervision for around 40 start-up initiatives each year. It also serves as a magnet for companies interested in establishing themselves on or near our campus. Based on the results of a nationwide competition we have earned the title “EXIST start-up university”.

INTERNATIONALIZATION IS A BASIC PRINCIPLE of all scientific activities. The university’s internationalization strategy adheres to the concept of strategic partnerships with top-notch universities abroad. These include TU Warsaw, TU Trondheim, TU Delft and TU Vienna. These partnerships serve to encourage broad-based cooperation and to promote diverse joint activities in research and teaching. A further building block consists of strategic cooperation with science institutions in the three target regions of Eastern Europe, South-East Asia and South America. TU Berlin currently offers 26 dual-degree programs in conjunction with partner universities in England, France, Poland, China, Russia and Chile, in addition to 17 English-language Master’s programs. International students from more than 130 countries make up about 20 percent of the student body. In the Alexander von Humboldt Ranking, TU Berlin currently ranks second among all technical universities. Other statistics further underscore the university’s international approach: TU professors alone were involved in 1500 cross-border cooperation projects between 2009 and 2011. In 2012, around 120 international science agreements were in force at the central university level.
FAMILY-FRIENDLY, EQUAL OPPORTUNITY AND WORKPLACE HEALTH POLICIES ensure a sustainable and attractive university. TU Berlin has earned the European seal of approval as a “family-friendly university” and is a multiple recipient of the Total E-Quality Award for promoting equal career opportunities for men and women. The German Research Foundation (DFG) has already twice awarded us its highest rating for how we reconcile work and family life. We are the most highly rated university in Germany in the nationwide CEWS ranking of equal opportunity aspects. A Dual Career Service, a Family Support Center, a TU-DOC Office and a School Outreach Center are practical examples of the modern instruments provided by TU Berlin to attract and actively serve its members. Promoting good health and fitness is also an important university task. 800 sports courses alone are offered each semester. Moreover, TU Berlin with its Olympic Athletic Center (Olympiastützpunkt Berlin) is a partner university in top athletics. We also actively support students involved in high-performance sports, whose participation in the Olympic Games, world or European championships demonstrates the successes of this university support program.

STUDENTS, SCHOLARS AND GUESTS HAVE ACCESS TO ONE OF GERMANY’S MOST MODERN SCIENCE LIBRARIES with its three million items in various media and 30,000 square meters of floor space. 1300 work stations in various forms, campus-wide wi-fi, 300 computer workstations, several meeting rooms, multimedia workstations and a lounge area are used intensely by as many as 3100 visitors each day.

TU BERLIN HAS ALSO ADOPTED A NEW APPROACH TO CAMPUS IT INFRASTRUCTURE. Our main campus – Campus Charlottenburg – operates the largest wireless internet access network of its kind in the world. The TU facility “innoCampus” aims to strengthen and develop the available competencies in the areas of e-learning, e-teaching, e-research and e-science. A modern, expandable, dependable and sustainable IT infrastructure for research, teaching and administration supports these activities.
The aim of the IT service center ‘tubIT’ is to efficiently provide basic services and support for the development and introduction of an IT infrastructure tailored to the needs of research.

**In 2013, TU Berlin initiated a vision of its own future.** With broad support from all status groups, the university adopted a strategy for future university priorities up to the year 2020. These ranged from establishing a new culture of teaching and learning and further developing of quality management systems, to promoting diversity in career paths, reinvigorating existing structures and developing modern campus management approaches.

The City of Berlin itself is another major benefit of studying and working at our university: TU Berlin is a vital component of one of the world’s most interesting metropolitan cities. Few other regions can boast such highly concentrated scientific and research activities as does the “City on the Spree”. Around 200,000 people from around the world teach, conduct research, work and study at Berlin’s four universities, Charité – University Medical Center Berlin, seven universities of applied sciences, three art academies, 18 private universities, as well as more than 60 research institutions. Important national research organizations such as the Fraunhofer Society, Helmholtz Association and Max Planck Society maintain several institutes here, in addition to eight research facilities of federal ministries. In the area of higher education alone, Berlin invests around 1.5 billion euros each year.

But the city has much more to offer. Berlin is a cosmopolitan city: people from 195 different cultures and countries help to mold and to shape the colorful cityscape.

Berlin is dynamic: The impacts of the political and historical upheavals of the 19th and 20th centuries can be seen everywhere. Virtually no other major city has reinvented itself as often. The formerly divided city has emerged as a European metropolis with an international flair and strong global appeal.

Berlin offers excellent quality of life, it is indeed a city that combines innumerable parks and green areas with urban living. Each neighborhood has its own character – ranging from “multicultural” to middle-class.

Berlin is creative: a big city promoting big ideas. Worldwide, the “City on the Spree” is in high demand for those wishing to establish companies or to exploit marketable ideas. The high number of academic spin-off companies has since become an important economic and business location factor.

Berlin is culture: the city’s lively cultural scene is characterized by more than 170 museums, more than 40 theaters and opera houses, in addition to innumerable galleries, concert halls, cinemas and other event locations.

**The great potential of the university, its members and partners makes TU Berlin one of the most attractive addresses in the German capital.**
TU Berlin is an internationally renowned research-intensive university dedicated to promoting science and technology for the benefit of broader society and committed to the principle of sustainability. The challenges and problems facing modern societies cannot be met on the basis of findings from individual disciplines. TU Berlin is addressing these challenges with the aid of transdisciplinary collaborative projects.

The establishment of important research partnerships in the context of the Excellence Initiative, the German Research Foundation (DFG) and European Institute for Innovation and Technology, in addition to constantly increasing third-party funding for the research projects, demonstrate the dynamic developments in this area. Prestigious science prizes and awards make these successes even more obvious; these include Alexander von Humboldt Chairs, Einstein Chairs, Gottfried Wilhelm Leibniz Prizes, and numerous grants from the European Research Council.

Research for Innovation – a credo that TU Berlin impressively implements. Its extraordinary profile as a technical university in association with its humanities, social, planning and economic sciences programs is indeed an excellent breeding ground for strong interdisciplinarity. By combining basic and applied research endeavors, and with close links to partners in science and industry, university researchers tackle societal issues and develop forward-looking solutions.

EXTERNAL FUNDING: AMONG THE BEST IN GERMANY

Third-party funding for research projects is one of many indicators of TU Berlin’s performance and reputation. In 2012, TU researchers raised funding in the amount of around 160 million euros. This record result corresponds to a doubling in just six years. The highly regarded external funding from the German Research Foundation (DFG) has more than doubled during the same six-year period. These results show how TU Berlin has been able to maintain a top position among the best German universities without medical schools. Our university’s competencies in knowledge transfer also find practical expression in the numerous inventions and patents. TU Berlin and Charité – University Medical Center Berlin hold top honors in this regard.
As part of Berlin and Brandenburg’s top-notch science landscape, in 2013 TU Berlin defined six research priorities to illustrate the university’s innovative performance, define social responsibilities and create links for cooperation projects. Such targeted focusing sharpens TU Berlin’s profile. These areas of focus are reflected in the specialist disciplines offered by the respective Faculties. They are also supported by horizontal competencies inherent in the fields of mathematics, humanities or planning sciences for instance.

One of these areas of focus involves MATERIALS RESEARCH, in connection with the disciplines of design, production technology and mechanical engineering. TU Berlin focuses on the development of new materials and complete manufacturing processes from the initial concept to the finished product, from resource extraction to product recycling. In addition to the materials and production sciences, biotechnology, medical technology and food technology also play prominent roles.
The subject and research field of CYBER-PHYSICAL SYSTEMS already plays a pivotal role in technology and society. Even now, more than 95 percent of microprocessors are embedded in everyday articles containing numerous sensors and actuators. Technical systems emerge hereby, which in the future will contribute to the safety, comfort and health of our society in heretofore unimaginable ways. In its various departments, TU Berlin possesses broad expertise ranging from non-linear physics to cognitive robotics and medical technology.

At TU Berlin, the specialist subject ENERGY SYSTEMS AND SUSTAINABLE RAW MATERIALS MANAGEMENT includes research in the areas of energy technology, aspects of the transition to sustainable energy sources, climate change, water supplies and how to best utilize limited resources. For instance, ongoing research projects examine efficient gas turbines, photovoltaics, networks and functional energy storage, energy-efficient cities and water supplies. Scientific innovation and its impact on production and consumption
patterns or individual environmental frameworks play a significant role in this regard. The obtained research findings are of central importance in terms of society’s future living standards and energy supplies.

Promoting and carefully planning the cultural, social, spatial and economic mobility of individuals and society is the focus of the specialist subject INFRASTRUCTURE AND MOBILITY. In close cooperation with other core subjects, we conduct research on how to best optimize settlement development, ecraft policy for infrastructure projects and develop technical and transport-related measures and associated technological innovations. A comprehensive approach stands at the center of this field, ranging from an understanding of societal processes and individual actions to assessing ecological effects and improving technical and economic investments in human habitats.

Work systems design, human-machine systems research, cultural reflections, ethical and gender-critical perspectives in KNOWLEDGE OF COMMUNICATIONS SYSTEMS all play an important role in this focus area. This is carried out against the background of a dynamically evolving scientific-technical world. Particular emphasis is also given to interplay that occurs between the various knowledge and communications systems, especially with respect to the generation of new knowledge.

TU Berlin’s core focus area HEALTH addresses ever-increasing life expectancies as one of the greatest challenges facing society. The ongoing demographic shift means that people over 70 years of age will have to face new realities. If we are to successfully address this trend the elderly must remain as healthy as possible. This will require preventative strategies to avoid age-related diseases, gender-specific health research, and new technologies in diagnostics and therapy. TU Berlin increasingly sees itself as an essential building block in the Berlin-Brandenburg region health alliance. Our contributions range from healthcare management, gender research, health economics, ethics and philosophy as they pertain to the life sciences, development of biocompatible materials, to food chemistry, food and beverage technology, and medical technology.
SCIENCE NEEDS YOUNG TALENT

In order to recruit the best young academics and give them the best possible career opportunities, TU Berlin provides dedicated assistance starting with an “Early Study” program for inquisitive schoolchildren and continuing right through the undergraduate, graduate and post-doc phases. In doing so, attention is given to achieving the greatest possible diversity. At the doctorate level, this ranges from ensuring access to the specific academic department, to cooperative forms of academic supervision in programs, to external dissertations in direct cooperation with industry. Independent projects, junior research groups and junior professorships are offered and encouraged during the post-doc phase. A conscious effort to promote more flexibility within professorial structures also serves to provide support for first-rate young talent in science. By 2020, ten percent of the currently highest endowed regular chairs (W3) will initially be tendered as limited, 6-year W1 or W2 chairs, which also applies to junior professorships. This new tenure-track approach allows the most successful teachers to then gain access to the next structural level at TU Berlin. It is on the basis of this concept that the university is striving to promote top-drawer young scientific talent, to integrate them, and to supporting forward-looking research topics.

INTERNATIONAL NETWORKING

The steady increase in the number of international research alliances underscores TU Berlin’s commitment to maintaining strong partners around the world through its simultaneous participation in two “Knowledge and Innovation Communities” of the European Institute for Innovation and Technology. Each of these research partnerships receives funding in the amount of more than 100 million euros and brings together the best teams from several European universities in the areas of research and industry. This makes TU Berlin one of Germany’s successful universities in the context of this “European Excellence Competition”. The governing bodies of the German partner in the innovation community “Climate Change: Mitigation and Adaption” and “Future Information and Communication Society” are located on the TU Campus Charlottenburg and EUREF-Campus of TU Berlin.

KNOWLEDGE AND TECHNOLOGY TRANSFER

Leveraging synergies and promoting knowledge and technology transfer – a motto stands for successful strategic cooperation with industrial firms. In the affiliated institutes such as the Deutsche Telekom Innovation Laboratories or Daimler Center for Automotive Information Technology Innovations, intelligent university and company research go hand in hand. Furthermore, TU Berlin currently maintains 14 endowed chairs through cooperation with companies such as AG and BASF SE, and with small and medium sized companies (SMEs). At the regional level as well, TU Berlin is strengthening knowledge and technology transfer by consistently supporting spin-off companies.
EXCELLENCE INITIATIVE FOR TOP-LEVEL RESEARCH

The Excellence Initiative of the German Federal and State Governments promotes outstanding research at German universities. The goal: to be the best in the world. In this highly regarded competition, German universities compete for a total of 1.9 billion euros in external funding. The TU Berlin has been successful in obtaining two simultaneous funding lines, twice in a row:

EXCELLENCE CLUSTER UNICAT – EFFICIENT USE OF RAW MATERIALS TO END OUR DEPENDENCE ON OIL

“Unifying Concepts in Catalysis” (UniCat) is the only Cluster of Excellence specializing in catalysis research, an area that is of significant economic importance. This interdisciplinary research network brings together more than 250 scientists working in the fields of chemistry, physics, biology and process engineering from four different universities (the Technische Universität Berlin as host university, the Freie Universität Berlin, the Humboldt-Universität zu Berlin and the Universität Potsdam) and two Max Planck institutes.

The cluster has a unique selling point in international research: through its focused research program, UniCat scientists are paving the way to forging stronger links between chemical and biological catalysis. The group is researching new possibilities for the catalytic activation and subsequent transformation of small molecules that are extremely important for the processes involved in raw material change. The molecules in question are methane, carbon dioxide and hydrogen. Clever catalytic processes are used to turn these into useful materials for the production of polymers, medicines and chemical energy sources independent of petroleum products. Furthermore, the scientists in the cluster are also researching the production of new antibiotics and diagnostic agents for use in medicine by coupling the biocatalytic processes.
Berlin is also an excellent location to study mathematics. The Berlin Mathematical School (BMS) offers an excellent basis in this regard. It has received support from the Excellence Initiative since 2006 and is the joint graduate school for the mathematics institutes of TU Berlin, Freie Universität Berlin, and Humboldt Universität zu Berlin. It is modeled after the mathematics departments of elite universities in the United States. The English-language degree course lets students advance from a Bachelor’s to a doctoral degree in just four to five years and attracts excellent students from all over the world. The BMS offers outstanding conditions for university studies: scholarships, a pleasant working environment, excellent supervision and mentoring services. Our one-stop office supervises, councils and supports our students in all aspects of daily life: from the application process to visa or child-care issues to soft-skill training opportunities. Currently, around 30 percent of our students are women. Together with BMS professors, including holders of four Leibniz Prizes, one DFG Communicator Prize and one Cantor Medal from the German Mathematical Society, ours students have the tools they need to navigate Berlin’s diverse mathematics landscape.
STUDYING
TEACHING
And
Providing our students with a comprehensive and forward-looking education is at the center of all we do at TU Berlin. However, in the modern globalized world in which we live, much more is required than simply utilizing existing knowledge. Beyond the basic acquisition of knowledge, our goal is thus to impart social competencies and transdisciplinary thinking to our students, thereby enabling them to identify, analyze and solve the complex problems of the future.

With its seven academic faculties, around 100 degree programs and nearly 32,000 students, TU Berlin is one of Germany’s largest technical universities and is a member of the TU9 Association, an alliance of the nine leading technical universities in Germany.

BROAD CURRICULUM

The breadth of the subjects offered and the career prospects they provide are very popular among high school graduates. Compelling core disciplines such as mathematics and natural sciences are purposefully interlinked with each other and with the engineering sciences. Technology-oriented economics, humanities and social sciences as well as planning sciences round out the specific scholastic profile, thereby ensuring innovative course content for a modern education. Right from the start, TU Berlin offers its students a science-based, high quality and research-oriented curriculum.

QUALITY ASSURANCE

More than 70 percent of students currently rate their courses as “good” to “very good”. The constant improvement and quality control of teaching performance is a strategic goal of our university and is another tangible result of our ISO 9001:2008 quality management system. In this way we systematically evaluate all our degree programs. In order to improve the public’s perception of the quality of teaching, in 2010 the first award for exemplary teaching was granted by the Friends of TU Berlin, which incorporates the results of quality analysis, as well as assessments by the students. Further competency-oriented course evaluations and surveys from the alumni are another component in systematic quality development.
MILLIONS INVESTED IN TEACHING EXCELLENCE

With its ten million euro program “Knowledge Offensive Through Learning”, over the past few years TU Berlin has initiated an intramural, cross-faculty competition to improve teaching. For its project entitled “First Rate Education For All”, TU Berlin will receive a further ten million euros up to 2016 from the “National Quality Pact For Teaching” of the federal and state governments. Much of this funding will be used to recruit more teaching staff. All stakeholders are striving to promote better student mentoring at large universities, as well as to improve the quality of teaching through continuing education and innovative approaches.

NEW MEDIA AND IT APPLICATIONS

The quality of teaching is also to be improved through a broad range of continuing science education initiatives in the area of academic instruction, in which the TU Berlin’s “Center for Univer-
University Teaching” plays an important role. Our university is a pioneer in the use of new media in teaching and in organizing studies. In addition to the family and student friendly flexibility afforded by e-options, such new options are meant to improve the quality of large lecture classes and to give the teaching staff the exact qualifications they need. Furthermore, TU Berlin is placing the notion of “student lifecycles” squarely at the center of all its study-related administrative processes, in order to optimize the entire area of studies and teaching and adapt them to the actual needs of the students. Together with all those involved, we will improve and expand the quality of service in a sustainable manner and as needed.

INTERDISCIPLINARY REFORMED DEGREE PROGRAMS

It’s all about interdisciplinarity, particularly in our curriculum: one relevant component of the learning module can be elected in all subjects. In the context of project workshops – a distinguishing feature of TU Berlin – students have the option of becoming teachers and carrying out research-based teaching themselves. New interdisciplinary reformed
degree programs have been successfully launched. These feature interdisciplinary teaching approaches, in addition to practice- and project-oriented event formats. Women in particular are embracing these new options. More than one dozen continuing education Master’s programs for working people round out this curriculum with a view to lifelong learning.

HANDS-ON TRAINING INCLUDED

TU Berlin students have access to practical training at renowned companies such as Siemens, Daimler or Deutsche Telekom, as well as at many major research institutions in the region. This is a great advantage for our students, whether in terms of obtaining traineeships, identifying subjects for theses and diplomas, or making initial contacts with potential employers.

INTERNATIONAL STUDENTS AT TU BERLIN

With around 20 percent of our students coming from abroad and numerous cooperation projects with partners around the world, TU Berlin is indeed a university with a decidedly international character. Close cooperation with top universities the world over finds expression in many joint degree courses and a worldwide network of exchange programs. Our partners include the École Centrale Paris, the Cass Business School in London, the KTH Stockholm, the University of Michigan, McGill in Canada, and the Jiao Tong University Shanghai. There are 260 active exchange programs with European partner universities and 70 with partners overseas. Around ten percent of all TU students study abroad each year, while around 700 students come to Berlin from our partner universities. Student exchange programs often yield a much coveted dual degree. TU Berlin is leading the way in Germany with its 26 international programs. We also offer 17 Master’s programs in English.
PAVING THE WAY TO A CAREER

Helping our students to start their professional lives: TU Berlin strives to make the transition of its students to professional employment as smooth as possible. Support instruments here include the Career Service, which organizes numerous events to help students find the best possible career path. In the course of their studies, early on students acquire both theoretical and practical career-relevant competencies such as management, IT knowledge and soft skills. Training programs, summer schools, graduate recruitment fairs and internships abroad are also offered. In the context of a dedicated mentoring program, TU alumni with professional experience advise and accompany students as mentors and help our graduates to plan their careers. Surveys of graduates show that around 65 percent of all former students remain in Berlin. Students with good business ideas planning to start their own companies also receive optimal support from TU Berlin. Our university’s multiple award-winning Center for Entrepreneurship offers numerous courses, and advisory and support services. This is supplemented by international degree programs in the context of the European Institute of Innovation and Technology. Well over 1000 TU alumni have started their own companies. A survey shows that start-ups established by TU Berlin graduates have become a significant economic factor with around 16,000 new jobs and a turnover of 1.1 billion euros.

WELCOME TO TEACHERS AND SCHOOLCHILDREN

TU Berlin is not only a place for university students and teachers. Over the past few years we have developed and expanded strong and multifaceted relations with schoolchildren, parents and teachers. Contacts with area schools range from a “Techno-Club” for schoolchildren interested in technology, to the highly popular “University at 16”, which gives high school students the opportunity to earn credit points towards their future studies at TU Berlin. These programs have served to enhance the university’s public profile and are a reflection of the high priority given by TU Berlin to the recruiting and training of students, and in particular to attracting young women to enroll in the so-called MINT subjects (mathematics – computer sciences – natural science – technology).
Humanities In
A Technical-Scientific World

When the former “Technische Hochschule” was re-established as the “Technische Universität Berlin” in 1946, the university’s new mission was to forge a forward-looking educational policy that would embed the teaching of technological skills and scientific expertise into an ethical orientation towards humanistic cultural values. The mission of the faculty today is to “advance the humanities in a technical-scientific world”. Our core academic tasks: to actively conduct research on the inherent conflictual relationship existing between the spheres of culture and the humanities on the one hand, and the natural, technical and humanities sciences on the other, to form forward-looking networks, and to impart this knowledge in a decidedly proactive manner.

The Bachelor degree program “Culture and Technology” uniquely expresses TU Berlin’s specific educational profile: the program’s curriculum purposefully combines the cultural sciences, core humanities subjects, and career-oriented courses. Program graduates can then continue their studies in nine research-oriented Master’s programs. These include graduate degree courses in “Philosophy of Knowledge and Science”, which examine the cognitive and normative roles of science in ‘human life-worlds’. The Master program “History and Culture of Science and Technology” challenges students to question the historical genesis of our modern technical-scientific world. “Art History and Art Technology” is dedicated to studying, preserving and transmitting European artistic and architectural heritage. “Historical Urban Studies” investigates how spaces that are home to urban life have become the locus of the modern history of civilization. The Master degree program “Communication and Language” emphasizes linguistics, media studies, German as a foreign language, and more hands-on applications in the area of communication science. Students also acquire the language skills they will need to work in media-related foreign language environments and intercultural contexts. “Audio Communication and Technology” explores the production, dissemination and reception of audio-visual content via electronic media in a modern information and knowledge society. “Educational Studies – Organization and Advice” addresses empirical educational research and the related education policy frameworks and impacts.

Twelve Bachelor’s and Master’s degree courses imparting vocational and workplace skills round out our accredited academic program, the only syllabus
of its kind in Berlin. The curriculum is geared to future-oriented research and career fields that can mediate and integrate values and scientific and cultural forms of knowledge.

The research profile of Faculty I is characterized by four internationally networked academic programs, which are closely linked to the university's six core research fields:

The aim of the “Knowledge Research” Innovation Center is to examine the interfaces and interactions that exist between various types of knowledge and knowledge cultures. The generation of new knowledge is the focus of the program.

The research focus “Cultural heritage as a resource” critically examines technical and artistic artifacts in their roles as storehouses of cultural knowledge and in terms of what role they might play in the future.

Research activities in the “Conditions governing educational processes” serve to establish a theoretical conceptualization and empirical description of the socio-cultural, societal/individual aspects and factors that make up and support educational and learning processes, or that hinder them.

Faculty I actively examines the issue of “Interdependence of culture and technology”, i.e. the exploration of the interactions occurring between technology and spiritual culture, for instance as reflected in world views, symbols or technology and as instruments of artistic creativity.

The “Center for Interdisciplinary Research and Gender Studies” and the internationally renowned “Center for the Study of Anti-Semitism” are further important contributions to TU Berlin’s excellent reputation in the humanities.
Mathematics, Physics And Chemistry – Three Core Disciplines Under One Roof

Faculty II is home to the core academic disciplines mathematics, physics and chemistry. Faculty II has earned wide recognition for its excellent scientific achievements in both pure and application-oriented research.

Mathematics is not only a millennium-old cultural treasure; today it is a multi-faceted and contemporary subject of teaching and research. This core academic discipline has since developed into a key technology of the information age. With all that a large technical university has to offer, TU Berlin students profit greatly from purposeful collaboration between the natural and engineering sciences on the one hand, and research in pure mathematics on the other. It is at this interface that TU Berlin mathematicians teach, conduct research, and devise hypotheses in response to increasingly complex challenges arising from engineering and the natural sciences.

Numerous cooperative projects and collaborative research centers, graduate schools and research groups associated with the German Research Foundation (DFG) underscore the high level of excellence maintained by the “Department of Mathematics”. The department also plays a leading role in the DFG research center “MATHEON” (Mathematics for Key Technologies), and “Berlin Mathematical School” (BMS), a joint graduate school receiving support from the “Excellence Initiative of Federal and State Governments”. These two important professional networks were the result of a fusing of several intramural and extramural mathematics institutes in Berlin; they enjoy worldwide recognition as beacons of excellence in mathematical studies. Together, these projects receive approximately 7.7 million euros in external funding each year. The TU Berlin is the host university for the research center “MATHEON”.

TU Berlin chemists also enjoy a prominent international reputation in the fields of pure and applied research – a reputation for excellence that is underpinned by modern experimental and theoretical methods. With an extensive infrastructure of large-scale research equipment that is available only in a few locations anywhere in the world, research can be carried out here in all 18 areas of specialization. Core research activities focus on the chemistry of
material sciences, synthetic chemistry and catalysis, biological and biophysical chemistry, and chemical technology.

The “Department of Chemistry” also serves as the central element of the excellence cluster “Unifying Concepts in Catalysis” (UniCat), which receives support in the context of the “Excellence Initiative of Federal and State Governments”. This program purposefully brings together chemists, engineers, physicists, and biologists from the greater Berlin-Brandenburg research region. The project receives six million euros each year, with TU Berlin acting as the host university.

Scientists in Faculty II’s four Physics Departments focus on solid-state physics, with particular emphasis on semiconductor and nanophysics, optics and nuclear physics, as well as theoretical and astrophysics. Application-oriented basic research forms the core of these scientific activities, for instance the excellent work of the “Center of Nanophotonics”, which boasts one of Germany’s most up-to-date cleanroom laboratories. TU Berlin scientists play a leading international role in the field of quantum dot laser technology and they maintain numerous partnerships with industry.

The core specialty areas of the Optics Department include light optics, laser physics, optical technologies, as well as electronic microscopy and electronic holography. As an example, TU Berlin is currently developing new laser systems and examining their optical characteristics. These inventions are used for practical applications in the laser processing of materials, as well as in the field of medicine. Nuclear Physics focuses mainly on experimental research in the areas of atomic, molecular and cluster physics. Research into clusters and nano-crystals is a major new field of scientific interest. Extensive research efforts addressing non-linear dynamics and Berlin’s only “Center for Astronomy and Astrophysics” round out this wide science spectrum.

Our Physics Departments are home to two DFG-sponsored “Collaborative Research Centers” and are operated collaboratively with other research institutions in Berlin. TU Berlin serves as the host university for both centers.

Faculty II is charged with providing a wide range of services for TU Berlin students, as certain mathematics, physics and chemistry courses are often obligatory for students seeking to earn an engineering degree. Faculty II has played a leading role in introducing “e-learning” and “e-teaching” at our university. The “innoCampus” is just one practical expression of our efforts in this field, a university initiative that receives support from numerous projects. The Faculty is also home to the interdisciplinary programs “Natural Sciences in the Information Society” and the orientative program MINTgrün (Mathematics, Computer Science, Natural Sciences, Technology).
Faculty III offers an exceptional academic and cutting-edge research concept that is unique in both Germany and beyond. Such academic excellence stems from the focused convergence of two core disciplines that are often taught separately at other institutions of higher learning. Faculty III actively promotes the close and fruitful merging of the fields of natural sciences and engineering sciences. The result: a unique combination of academic and research fields in the process sciences.

"Resource-efficient processes and products" is the guiding principle that drives close cooperation between our scientists from the fields of biotechnology, food chemistry and technology, energy and process technology, environmental science and technology, and materials science.

Processes and process chains are at the heart of teaching and research at Faculty III. These focus on the transformation and transport of energy and materials by means of physical, chemical and biological processes. This research finds practical expression in the spheres of production and waste disposal solutions for chemicals, materials, biotechnological products, energy and energy carriers, foods and fodder, commodities and environmental media. The natural sciences set the agenda in terms of the Faculty’s analytical, chemical and biological research priorities. The engineering disciplines contribute their expertise to the challenges posed by the issues of energy and process technology, as well as materials science. By conducting research at the interfaces between these branches of science we have created a uniquely holistic and sustainable approach to university learning.

The study programs offered by Faculty III adhere to the methodological principle of ensuring access to a wide spectrum of natural and engineering sciences. In doing so we are always mindful of the importance for our students of acquiring subject-specific, fundamental knowledge in the context of our Bachelor’s degree programs, followed by more finely delineated, research-oriented learning in our Master’s degree programs. Our goal: to educate interdisciplinarily trained, highly qualified process engineers who can assume managerial positions in industry and commerce, and in research and engineering. In addition to imparting cutting-edge technological know-how and providing opportunities for our students to gain research experience, we also emphasize forward-looking approaches to, and the holistic planning.
development and implementation of innovative processes and products.

In addition to our worldwide network of exchange projects with partner universities, Faculty III also offers dual degree programs in cooperation with universities in France, Poland, and South Korea. Faculty III also actively participates in the advanced Master’s degree programs “Energy Engineering” and “Water Engineering”; these are two of the three degree courses currently on offer at our new TU Campus in El Gouna, Egypt.

In the area of research, Faculty III is actively contributing to TU Berlin’s future-oriented academic profile. This includes projects associated with the “Excellence Initiative of Federal and State Governments”, collaborative research centers, in addition to our successful “Innovation Centers”. These were established at TU Berlin to underpin the university’s internal strategic approach to promoting interdisciplinary and trans-disciplinary research on contemporary issues. Faculty III is integrated in the excellence cluster “Unifying Concepts in Catalysis” (UniCat) with various faculty chairs taking part in the specialist research area of “Complex Process Technology”. Faculty III serves as the lead institution for the DFG Collaborative Research Centers “Integrated Chemical Processes in Liquid Multiphase Systems” (InPROMPT) and “Substantial efficiency increase in gas turbines through direct use of coupled unsteady combustion and flow dynamics” (Turbln). Faculty III is also host to three of the university’s six “Innovation Centers”. The “Innovation Center – Energy” is the central focus of TU Berlin’s holistic approach to energy research and complex energy-related issues. The “Innovation Center – Technology for Health and Foods” utilizes a transdisciplinary approach to identifying innovative solutions to research challenges posed by future health- and food-related issues. The “Innovation Center Water in Urban Areas” seeks to find solutions to global water problems by elaborating ‘energy efficient technologies for developed conurbations’.

The future focus of Faculty III is to strengthen intra-departmental, interdisciplinary research activities that address cross-cutting scientific issues in order to further sharpen our profile as Germany’s leading school of process technology.
Innovative Alliances And Prestigious, Award-winning Research

FACULTY IV
ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

With six institutes, 60 professors and more than 500 scientific staff members, Faculty IV is one of the leading university faculties of its kind in Germany. The Faculty’s scientific productivity is reflected both in the large number of publications and the high level of external funding, which reached a record of 39 million euros in 2012. More than seventy young scholars earn Ph.D.s each year. Our research collaboration with top universities in North America, Europe, and Asia ensures an ongoing international exchange of ideas and information. The numerous honors awarded to the Faculty’s scientists are yet another reason for our outstanding reputation. Three of the Faculty’s professors have been awarded the prestigious Gottfried Wilhelm Leibniz Prize presented by the German Research Foundation (DFG). Further scientific honors include ERC Starting Grants, Emmy Awards, and an Alexander von Humboldt Professorship. Currently, groups of scientists at Faculty IV who are enjoying particular success are engaged in efforts related to the future of the Internet, conducting research on the coding and transmission of audio and video signals, working on the further development of cloud computing, and making cutting-edge contributions to brain research.

At present, approximately 3500 students are enrolled in the Faculty, about 1200 of which are international students, who all can benefit from a broad range of cutting-edge courses. These encompass Bachelor’s and Master’s programs in Electrical Engineering, Computer Science and Technical Computer Science, as well as a Bachelor’s program in Business Informatics. Beginning in WS 2013/14, students can also apply for the Business Informatics Master’s program. The Faculty also offers two specialized Master’s degrees in Computational Neuroscience and Automotive Systems. Faculty IV is also strongly integrated in the activities of the European Institute of Innovation and Technology (EIT). TU Berlin is the only German university among the “core partners” of the EIT ICT Labs, a European innovation incubator in the field. In the context of this effort the TU Berlin offers an international Master’s program in ICT Innovation. Of interest to Faculty IV’s internationally minded students are joint agreements with several prestigious universities including Shanghai, China’s Jiao Tong University and the Universidad Federal do Rio Grande do Sul in Brazil. But above all, Faculty IV’s exciting research environment makes it possible for students to become part of major research projects at an early stage, thus...
strengthening their chances for a future position in a scientific field.

The Faculty concentrates its research expertise in six organizational structures called “Labs”. These Labs not only function as a subject-based framework for the expert research, but also as lively interdisciplinary alliances. With these instruments at its disposal, the Faculty hones its profile as a driver of innovation and creates an inspiring research environment for cooperation, exchange, and a joint vision that, naturally, enriches our educational efforts. Our six Labs comprise the research areas of Cognitive Systems, Cyber-Physical Systems, Data Analytics & Cloud, Future Internet & Media Technology, Integration Technology & Photonics and Sustainable Energy Systems & Mobility.

The Faculty is part of a powerful network of research institutes. Around twenty professors hold leadership positions in institutions outside the university including the Fraunhofer Institute for Open Communication Systems FOKUS, Fraunhofer Institute for Reliability and Microintegration IZM, Fraunhofer Heinrich Hertz Institute HHI, Fraunhofer Institute for Production Systems and Design Technology IPK, and the Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik (FBH). We also maintain strong ties to the following institutions: the Helmholtz-Zentrum Berlin (HZB) in the photovoltaic sector, the Department for High Frequency and Semiconductor System Technologies (IHP), the Berlin Daimler Center for Automotive Information Technology Innovations (DCAITI), the Federal Institute for Materials Research and Testing, Physikalisch-Technische Bundesanstalt (PTB) – the German national metrology institute providing scientific and technical services, the Berlin Electron Storage Ring Society for Synchrotron Radiation, the Fraunhofer Institute for Production Systems and Design Technology (IPK) in the field of microsystems technology. Faculty IV enjoys a particularly forward-looking partnership with the Deutsche Telekom. In the context of this collaboration we have established several endowed chairs to head the “Telekom Innovation Laboratories” located on the TU’s Charlottenburg Campus.
By purposefully combining the fields of mechanical engineering, transport systems and psychology, Faculty V offers a unique research platform for knowledge and engineering sciences. At the center of our scientific work: the examination and characterization of complex systems with their interacting technical, social, ecological and economic components. This is also the basis for the Faculty’s leitmotif:

Keeping people at the center of technological systems.

The core competencies of Faculty V include the following topics:
– Evolution of technical systems
– Mobility and energy-efficient traffic systems
– Interaction between humans and technology

The diversity of our Faculty chairs provides broad expertise in the engineering sciences and beyond. Efficient and sustainable products and processes are important components of our research and development activities. Building on the knowledge gained in the Faculty’s core disciplines of mechanics, design and acoustics, all kinds of resource-efficient vehicles for surface and air transport systems can be developed. One example of these activities is the research cluster ‘E-Mobility’, with its around 20 TU Berlin chairs and in which Faculty V plays a pivotal role.

Beyond these product-focused competencies, the planning aspects required to improve the efficiency of ground and air transportation carriers are also considered. Moreover, the production processes required to meet application and usage demands can be optimized directly within the Faculty.

To emphasize the importance of a human-centered technological world, our engineers cooperate closely with psychologists in the key interdisciplinary research field of human-machine systems. It is important to guarantee the safety and security of such systems, in as much as incalculable risks can arise whenever collaboration between man and machine breaks down, whether
during surgeries or in air traffic control towers. Research and academic activities in this subject area are explicitly and intentionally linked with our interdisciplinary Master’s program “Human Factors”, the only one of its kind across Germany.

Our students benefit greatly from such close linkage between research and academic instruction at both the basic and application-oriented levels; our students have excellent prospects in terms of finding employment upon completion of their studies. The broad appeal of Faculty V’s Bachelor’s and Master’s degree programs turn our graduates to highly qualified specialists who are in high demand in both Germany and abroad. The three core Bachelor’s programs “Transport Systems”, “Mechanical Engineering” and “Physical Engineering Science” are augmented by the advanced Master’s programs such as “Aeronautics and Astronautics”, “Transportation Planning and Operation”, “Production Engineering” and “Biomedical Engineering”. All our degree courses are accredited by ASIIN e.V.

All this gives students and doctoral candidates the options they need to specialize in the areas of basic or applied research. We have set up a dedicated platform for networking with our students. This network gives students the opportunity to make contacts with specialist fields at other TU Berlin faculties, with on-campus and extramural research institutions as well as with spin-off companies and private industry. Faculty V has also earned the “Seal of Quality” from the “Faculty Association Process Technology and Mechanical Engineering” (FTMV).

In addition to significant financial support from the German Research Foundation (DFG), the European Union and German Federal Ministries, we also profit greatly from broad cooperation with industry. The strength of Faculty V is also characterized by close networking and the ability to adapt to the needs of the society and a consistent strategic vision. We participate in numerous important collaborative research projects including Transregio and technology transfer programs, a DFG graduate school as well as four interdisciplinary research networks and several intra-university research areas. Faculty V serves as the host institution for the DFG Collaborative Research Center “Sustainable Manufacturing – Shaping Global Value Creation”. Important components of the Collaborative Research Center “Substantial efficiency increase in gas turbines through direct use of coupled unsteady combustion and flow dynamics” (TurbIn) are covered by chairs of Faculty V as well.
The Place To Be For The Planning, Spatial And Construction-related Sciences

Faculty VI offers its students an excellent and international academic profile, indeed a most unique didactic approach that purposely unites the planning, spatial, and construction-related sciences. Professors from the spheres of architecture, civil engineering, city and regional planning, landscape architecture and environmental planning, geo-engineering, social sciences, geodesy and ecology teach and actively conduct research at Faculty VI.

The “Department of Architecture” willingly assumes the singular responsibility of promoting environmentally responsible building construction for future generations. We examine architecture’s responsibilities in terms of design, culture and the environment. Particular emphasis is given to the massive construction-related consumption of resources and resulting consequences for the environment. Further areas of interest in the areas of teaching, research and professional development include structural engineering, climate-friendly and sustainable construction, urban renewal, preservation of historical buildings and monuments, and construction research. We promote close cooperation between the planning sciences and the spheres of urban development, metropolis research, housing, as well as location and project development, urban and regional economies, and real estate economics.

Our “Department of Urban and Regional Planning” is one of the most important planning schools in Germany. It takes full advantage of Berlin’s reputation as Germany’s top location for planning research and planning consultancy activities. The course profile of the degree program “City and Regional Planning” is an expression of the pivotal importance of project-based learning.

The concept of urban ecology as an independent research field originated at TU Berlin. The “Department for Ecology” covers a broad spectrum of biotic (plants, fauna) and abiotic (soil, water, climate) components of the ecosystem in the terrestrial and aquatic sphere. Our institute offers a broad range of courses and dedicated academic networking within the fields of planning science, engineering science, and specialist disciplines in resource efficiency.

The “Department of Landscape Architecture and Environmental Planning” focuses on the design, configuration and environmentally sustainable planning of unused space and landscapes. Important tasks here include the elaboration of contemporary strategies for the planning of undeveloped areas and future landscape growth, in addition to the pressing issues of climate change and energy policy. Social and economic
aspects are also examined in terms of sustainable development requirements. Satellite data and geo-information systems support these lines of research.

The “Department of Sociology” cooperates closely with the individual technological science disciplines of TU Berlin and is closely linked with the “Center for Technology and Society”, with its focus on innovation and mobility research. The novel degree course “Sociology of Technology” is the only one of its kind in Germany.

For the first time anywhere, our “Department of Civil Engineering” has initiated a new approach to learning and research in the design and manufacture of all types of materials. This approach also includes specialty areas in design and construction, solid structures, metal construction and lightweight construction, as well as composite structures. Additional areas of research emphasis include construction technology, building diagnostics, construction and soil dynamics, as well as the developing and financing of infrastructures for urban areas. Our institute is also taking on new challenges, for instance by helping to establish offshore wind parks.

The spectrum of challenges facing sustainable geo-resource management in the applied geosciences ranges from the exploration, evaluation and utilization of space, both above and below ground, to materials research and environmental research. In the fields of geodesy and geo computer science, the latest satellite-assisted analytical methods are used in earth system and planetary sciences research, in precision navigation and geo-positioning, as well as in creating coordinate reference systems for geographic information systems (GIS).

All Faculty VI academic programs lead to Bachelor’s and Master’s degrees. The ongoing internationalization of the academic world is reflected in the number of dual degree, English-language programs offered, for example Germany’s only Master courses in “Urban Design”, “Geodesy and Geo Information Sciences”, “Urban Ecology Sciences” and “Environmental Planning”. In the area of continuing university education, Faculty VI has initiated the degree courses “Conservation of Monuments, Historic Buildings and Sites”, “Stage Design”, “Real Estate Management”, and “Urban Management”. 
“Business Administration And Engineering” –
A Profile-building University Degree

TU Berlin teaching and research in the fields of economics and management focus strongly on the acquisition of practical and technology-oriented entrepreneurial and management skills. Business management, economics, commercial law, and technology and management are the core focus of academic learning at Faculty VII. Important research topics at our Faculty include innovation research, logistics, infrastructure and network economics and health. Further scientific projects include empirical economic research and economic policy, organization and corporate management, as well as strategic controlling and patent management.

Our research activities profit greatly from close cooperation with industry. The individual Faculty chairs independently participate in various national and international research networks in important specialist areas. These include competitive strategies in the pharmaceutical and telecommunication industries, the development of Berlin-Brandenburg into a strong logistics region, hospital logistics and chain of command issues within European stock markets, and developing commercial-law-oriented risk management systems.

Faculty VII’s excellent “Business Administration and Engineering” degree course was first introduced in 1926 by our predecessor university, the “Technische Hochschule Berlin”. Today, it remains one of the most prestigious degree courses of its kind in Germany. By combining the fields of economics and jurisprudence with those of the engineering sciences, our graduates are well-rounded young professionals with great prospects for success in both national and
international job markets. Our graduates have excellent career opportunities.

The “Center of Knowledge Interchange” (CKI) is an academic support institute that is housed in our Faculty. CKI applies appropriate learning methods in order to impart the pivotal skills and key knowledge our students need, e.g. good communication, integration and planning skills, gaining an international perspective and developing entrepreneurial thinking. Internships and dissertations give students the opportunity to acquire practical work experience at associated companies, as well as to make concrete contacts that will help them in their future careers.

Faculty VII cooperates closely with TU Berlin’s “Center for Entrepreneurship”, whose mission is to impart basic scientific knowledge to future entrepreneurs, and to integrate the acquisition of such skills into university curricula.

Beyond the prestigious Bachelor and Master level courses “Business Administration and Engineering”, Faculty VII also offers the Bachelor program “Economics”, in addition to the Master’s degree courses “Industrial and Networks Economics”, and “Innovation Management and Entrepreneurship”, a dual degree program carried out in association with the University of Twente in the Netherlands.
University Mission

STATEMENT
PREAMBLE

TU Berlin has a long and rich tradition and is recognized globally as an excellent research university. Our goal is to continue to develop science and technology for the benefit of our society. The members of the university are wholly committed to the principle of sustainable development which tackles contemporary challenges without further burdening future generations. For us, research and teaching are inseparably linked.

Using innovative, technology-oriented and holistic methodologies we are contributing to the shaping of a better future. We are fully aware of our responsibility vis-à-vis society – not only due to our history – but also because we must uphold ethical and humanistic oriented standards in our research and teaching endeavors. It is against this background that research and teaching in the natural, planning and engineering sciences are inextricably linked with the humanities and social sciences. All our research and teaching activities serve civilian purposes exclusively.

Our university members are actively engaged in promoting equal opportunity between women and men and in creating family-friendly study and working conditions. We strive to ensure equal opportunity and non-discrimination at all levels of the university organization. In our teaching and research we also explicitly embrace the plurality of world views and diverse ways of life.

RESEARCH

We carry out basic and application-oriented research at a top international level. On the basis of our comprehensive spectrum of disciplines we establish fields of future scientific focus and promote cross-faculty research activities and networks with external actors.

TEACHING AND ACADEMICS

TU Berlin is an attractive educational institution in which students acquire the academic and social competencies they will need for their careers and to actively shape the society of the future.

The broad range of subjects offered by TU Berlin provides students a transdisciplinary scientific education, which in turn is an expression of the
university’s societal and global responsibilities.

Continuing education in science is an integrative component of university training and enables lifelong learning.

We are open to the concept of innovation as the basis for constantly improving our university. We are continuously refining the quality of instruction by promoting dialogue between our teachers and students, in addition to developing further options that can ensure the ongoing professionalization of our academic staff.

PRACTICE-ORIENTED KNOWLEDGE TRANSFER

We promote knowledge and technology transfer between our university and practical applications. We form strategic alliances with companies, as well as with university and non-university research facilities. We also promote innovation transfer through spin-offs and by supporting TU Berlin members in establishing their own companies. We organize public discussions, advise policy actors, we are active members in a regional and supra-regional network, and we foster relationships with our alumni.

ORGANIZATIONAL CULTURE

TU Berlin regards itself as a learning organization that continuously develops its human resources. All status groups contribute to achieving optimal organizational and management structures and to positively impacting university life. We operate our facilities in a safe, healthy, resource-friendly and environmentally conscious manner. We systematically support our budding young scientists in finding attractive and challenging employment and trainee positions.
FACILITIES
In addition to our main campus situated in Berlin’s Charlottenburg-Wilmersdorf district in the heart of the “City West” area, TU Berlin also maintains two further large campuses in Berlin. One is located in the historical industrial district Wedding, and the other on the property of the famous “Gasometer” in the Schöneberg district. Individual laboratories, TU buildings and sports halls are also scattered around the city. In late 2012, the university inaugurated its first satellite campus on the Red Sea in El Gouna, Egypt.

**CAMPUS CHARLOTTENBURG**

With around 35 000 students and more than 9 000 employees, Campus Charlottenburg is the largest contiguous inner-city university campus in Europe. It is also one of Germany’s most diverse locations for science, art and design, all firmly embedded in the middle of the German capital and one of the most important metropolitan areas for science in Europe. Situated directly on Ernst Reuter Square, not far from the Zoologische Garten station and Kurfürstendamm Avenue, Campus Charlottenburg is home to most TU Berlin institutes and the main administrative building with its Auditorium maximum. The internationally renowned Universität der Künste (Berlin University of the Arts) with a long and rich tradition is located right next door and is one of the largest and most diverse arts academies in the world. The close cooperation that exists between the two institutions is indeed unique, particularly in technology and design subjects. Such close collaboration provides students with numerous possibilities in terms of acquiring a modern education and promoting innovative product design, transdisciplinary approaches, and new avenues of cooperation with industry. The joint project “Hybrid Platform” purposefully links concepts from the spheres of art and technology, thereby creating a network in which various disciplines can thrive.

The tradition of science facilities located on Campus Charlottenburg dates back to the last third of the nineteenth century. These institutions include the Physikalisch-Technische Bundesanstalt (Physical and Technical Institute), founded 125 years ago, scientists such as Hermann von Helmholtz worked here.
In addition to TU Berlin and the Universität der Künste, Campus Charlottenburg is also home to its own private universities and several non-university facilities, for instance the Produktions-technisches Zentrum (Production Technology Center). In its giant research hall or “Factory of the Future”, university research and teaching endeavors coexist fruitfully with the industry-oriented applications of the Fraunhofer Society.

**CAMPUS WEDDING**

Where today more than 20 departments of TU Berlin are located, the electricity boom of the late 19th century signaled the beginning of an entire industry. Back then, the AEG factories were thought to form a kind of Elektropolis. In the 1980s, TU Berlin took over this area and opened the first German technology and innovation park (TIB) and start-up center “BIG”. This ushered in a new form of practical support for young innovative firms in Germany. This model has since served as a blueprint for many similar institutions around the country. In addition to civil engineering, building physics and building construction, further TU chairs located here carry out research in the fields of motorized vehicles, traffic systems, biotechnology and food chemistry.

The Fraunhofer Institute for Reliability and Microintegration is another campus neighbor. Economic diversity and new potential for innovation characterize the orientation of these on-campus firms. Around 150 on-campus firms are also world leaders in developing high-tech products for the global market. This spectrum ranges from production, development and research companies, to applications and service firms. The Humboldthain Technology Park is home to all these enterprises.
In close cooperation with EUREF AG, a new TU Berlin campus has emerged on the property of the former Gasometer in Berlin’s Schöneberg district and was inaugurated in October 2012. Three advanced Master’s programs dealing with the issue of “City and Energy” are offered here. This facility comprises 1700 square meters of floor space of an historic red brick building called “the water tower”. These course offerings are fully integrated into the overall structure of the European Energy Forum (EUREF). Companies and research institutes addressing the topic of “Intelligent city for work, research, education and living” are finding homes here. These endeavors focus on developing energy-efficient buildings and CO₂-neutral energy supplies. Through close cooperation between science and teaching on the one hand, and research and practical applications on the other, the EUREF-Campus serves as a powerful test platform for a sustainable model city.

TU Berlin’s new satellite campus is situated directly on the shores of the Red Sea in El Gouna, Egypt. In the context of a public-private partnership project that is unique in all of Germany, an approximately 10,000 square meter modern campus has been built with its own Auditorium maximum and library, in addition to seven further buildings housing seminars, offices and laboratories. This initiative project was made possible by the very generous monetary and principled commitment of TU alumnus and entrepreneur Samih Sawiris. His goal: to provide as many young people as possible in Egypt with an excellent education in engineering as he himself enjoyed while a student in Germany at TU Berlin.

A new TU Berlin Central Institute was tasked with developing three advanced Master’s programs in the areas of “Energy Engineering”, “Urban Development” and “Water Engineering”, which were initiated in 2012 on TU Berlin’s “Red Sea Campus”. TU Berlin is the first German university to offer degree programs in Egypt with a curriculum that is subject to the provisions of German university legislation, both in terms of course content and structure.

The city of El Gouna was built on an artificial lagoon; in Egypt it is considered to be a model project in terms of environmental impact and resource efficiency. The new Master’s programs are meant to give students the qualifications they need to help find solutions to regional challenges: extracting renewable energy from the unlimited sun and wind resources, in addition to ensuring clean water supplies through desalination and recycling.

With this new satellite campus, TU Berlin has at its disposal a unique flagship project that further strengthens existing internationalization and training strategies. Moreover, the new El Gouna Campus provides direct access to research challenges and projects in both the Middle East and North Africa and helps our university to ensure quality education in that part of the world.
HISTORY
It All Started With Schinkel And Beuth

The roots of the Technische Universität Berlin and predecessor institutions date back to the time of Frederick the Great. These included important educational establishments of the Prussian State such as the Königliche Bergakademie zu Berlin (Royal Mining Academy) established in 1770, the Königliche Bauakademie zu Berlin (Royal Building Academy) founded in 1799, and the Königliche Gewerbeakademie zu Berlin (Royal Trade Academy), which opened its doors in 1827. The Königlich Technische Universität zu Berlin (Royal Technical Academy) arose in 1879 through a merger of the Royal Trade and Building Academies. The architect Karl Friedrich Schinkel, whose structures even today adorn Berlin’s cityscape, and Christian W. Beuth, the “Father of Engineering”, were instrumental in establishing these institutions.

Bestowing Doctor’s Honors in the Atrium

The significance of the technological and natural sciences grew in proportion to increasing industrialization in the nineteenth century. The need for trained engineers increased markedly, as did calls for their recognition in both societal and science terms. The founding of the Königlich Technische Universität zu Berlin was thus an important and successful step in this direction. In 1899, Emperor Wilhelm II was the first statesman to grant technical universities in the German Reich the right to bestow doctoral degrees. The festive bestowal ceremony was held in the atrium of the Königlich Technische Universität zu Berlin. This was the first time that engineers
could formally enjoy the same rights and privileges as classically educated academicians.

**INCUBATOR OF FUTURE NOBEL PRIZE WINNERS**

The University played a pivotal role in Berlin’s ascent to one of Europe’s most important industrial cities. The TH zu Berlin became the “intellectual nucleus of a much envied model and focal point of technical progress”, as stated by the Association of German Engineers in 1906. Into the 1930s, numerous Nobel Prize winners studied and taught at the University, for instance the chemists Carl Bosch and Fritz Haber, and physicists Gustav Hertz, Eugene Paul Wigner, Wolfgang Paul, George de Hevesy, Dennis Gabor and Ernst Ruska.

**THE DARKEST CHAPTER**

Starting in 1933, National Socialist ideas also began to emerge at the TH Berlin. The discrimination and expulsion of Jewish and critical scholars – including Gustav Hertz and Georg Schlesinger, the pioneer in modern production sciences, who together with Albert Einstein co-founded the Technion Haifa – was the darkest chapter in our university’s history. Its buildings also lay in ruins by the end of the war. Several initiatives have been started to address and to come to terms with this difficult legacy. The latest involved a research project at TU Berlin’s renowned Center for the Study of Anti-Semitism. It traced which Jewish and politically undesirable scholars and students suffered discrimination and ultimately were excluded from university affairs or expelled. Research addressed how doctoral titles were actively blocked and academic titles rescinded. When the research findings were presented in 2013, the TU President apologized publicly in the name of the University for the expulsion of and discrimination against university members during the National Socialist period. Further projects involving in-depth assessments of the university’s history are planned in the context of the upcoming 70th anniversary of its founding in 2016.
GERMANY’S FIRST “TECHNICAL UNIVERSITY”

The new opening in 1946 was not seen as a “reopening”, but rather as a clean break with the National Socialist past. This was also reflected in its new name: as Germany’s first technical university the name “Technische Universität” was chosen. At the same time, the school’s educational mandate was also reframed, with a universal education now being the focus. From then on, the humanities were to be integral components of a technology- and research-oriented university. This is how the first technical university in Germany with a humanistic element was established. More than ever, this purposeful building of bridges between technological research and responsibility vis-à-vis society remains a priority for TU Berlin.

CENTER OF THE STUDENT PROTEST MOVEMENT

Right from the start, TU Berlin demonstrated openness to reforms and innovations. The student movement in the late 1960s prompted far-reaching changes in the German university system. Thanks to its location in what was then West Berlin, TU Berlin was often the point of departure for activities by Berlin students during this period. The 1960s and 1970s were characterized by a significant expansion of German universities, resulting in an increase in the number of students at TU Berlin.

NEW HORIZONS SINCE REUNIFICATION IN 1989

Berlin’s reputation as a center for science activities grew significantly after the fall of the Berlin Wall, as did the related costs. The beginning of the twenty-first century forced the university to make significant cuts in structural terms. This included a complete switchover to a Bachelor’s/Master’s degree system, a sharp decline in the budget provided by the State of Berlin and a far-reaching generational renewal: 90 percent of all chairs were newly appointed during the first decade of the new century. Growing competition for external funding and ‘the best minds’ increasingly characterized the German university environment. Examples of this include the ‘Excellence Initiative of the German Federal and State Governments’ and international recruitment schemes.

SHARPENING OUR ACADEMIC AND COMPETITIVE PROFILES

TU Berlin has used these cuts and changes to consistently enhance its profile: decision-making structures were extensively modernized and streamlined. The seven faculties have clearly defined areas of scientific focus. Research priorities were defined across faculty boundaries. Today, TU Berlin’s profile is characterized by new strategies to promote young scholars, equal opportunity and family-friendliness, development of research-oriented teaching, and continued development of the internationalization strategy, in addition to a future-oriented campus and IT development plan.
FRANZ REULEAUX (1829–1905) served as Rector of the TH Berlin between 1890 and 1891. His name became closely associated with machine kinematics.

ADOLF SLABY (1849–1913)
In 1882 he became Professor for Theoretical Mechanical and Electrical Engineering at the TH Berlin in 1882 and was its Rector between 1894 and 1895. He conducted research in the field of wireless telegraphy. He was instrumental in starting the industrial development of radiotelegraphy.

ALOIS RIEDLER (1850–1936) was the father of modern technical drawing. He was awarded a chair as Professor for Mechanical Engineering at the TH Berlin in 1888, and became Rector in 1899. He was a pioneer in practically-oriented scientific approaches to engineering training and made a name for himself in automotive engineering.

HERMANN FÖTTINGER (1877–1945) was appointed a chair at the TH Berlin in 1924. He was Germany’s first Professor for Fluid Mechanics and was responsible for developing the first fully-automatic gearbox.

HANS GEIGER (1882–1945) served as Director of the Institute of Physics of the TH Berlin. Together with his colleague Walter Müller he discovered that, using a Geiger-Müller tube, it was possible to detect radioactive particles and to measure their energy.

GEORG SCHLESINGER (1874–1949) studied at the TH Berlin; in 1904 he assumed the TH Berlin’s newly founded Chair for Machine Tools and Manufacturing Processes. Schlesinger is considered the “father” of modern manufacturing techniques.
HANS SCHAROUN (1893–1972) studied at the TH Berlin School of Architecture and taught urban development at the TU Berlin. His design of Berlin’s Philharmonie Concert Hall proved to be an architectural masterpiece of international renown.

ERNST RUSKA (1906–1988) received the Nobel Prize in Physics in 1988 for developing the first electronic microscope. He was a student at the TH Berlin and he taught at TU Berlin starting in 1949.

WALTER HÖLLERER (1922–2003) was appointed Professor of Comparative Literature at TU Berlin. He was also a poet, publisher of literary journals and founder of the Literary Colloquium Berlin. He is credited with building bridges between the humanities and technological/natural sciences at the TU Berlin.

KONRAD ZUSE (1910–1995) studied at the TH Berlin and later developed the world’s first process-controlled calculating machine, thereby ushering in the computer age.

GUSTAV HERTZ (1887–1975) came to the TH Berlin in 1927, one year after receiving the Nobel Prize in Physics. He was responsible for forming the new Institute of Physics at the TH Berlin.

EUGENE PAUL WIGNER (1902–1995) studied and taught at the TH Berlin. He formulated the law of conservation of parity and was active in the field of nuclear physics. He received the Nobel Prize in Physics in 1963 for his research into principles of symmetry and nuclear and elemental physics.

CARL DAHLHAUS (1928–1989) taught at TU Berlin as Professor of Musicology from 1967 until his death. He remained at TU Berlin despite tempting offers from other prestigious universities. Under his aegis, the field of Musicology gained wide recognition as a valid academic subject. He enriched the field of Musicology through his contributions to historical theories, the esthetics of music, musical theory and musical analyses.
PUBLIC RELATIONS
ALUMNI PROGRAM WITH 30,000 MEMBERS

TU Berlin not only serves its students and staff, it also maintains a wide-ranging network with the public at large. One integral component in this network are the approximately 30,000 alumni, who keep in touch with their alma mater through the TU Alumni Program. Around 1,000 alumni have created spin-off companies from TU Berlin, or upon completion of their studies have established their own companies. Many still have their company headquarters in Berlin and the university maintains numerous business contacts with them. Former students also take part in assessing the curriculum or act as donors and mentors. Today, around 5,500 TU alumni are scattered around the world in 138 countries. There are TU Berlin Alumni Clubs in ten countries and whose members actively serve as university ambassadors. TU Berlin was the first German university to develop an international alumni outreach program in the early 1980s. A strong network of German graduates was formed during the 1990s. Both the university and our students benefit greatly from extensive continuing education and training programs – whether in Lima, Shanghai or Berlin.

THE SOCIETY OF FRIENDS OF TU BERLIN

For more than 90 years, as members of “The Society of Friends of TU Berlin” motivated supporters have been demonstrating their strong commitment to the university. When it was first established in 1922, well-known personalities such as Ernst von Borsig, Walther Rathenau, Franz Oppenheim and Hugo Stinnes were among its first members. Even then, the advancement of science and promising junior researchers was the focus of the Society. It provided dedicated support to Ernst Ruska’s research team, which ultimately received the Nobel Prize. Today, the Society offers numerous scholarships and awards for young researchers, including the annual “Prize for Exemplary Teaching” for exceptional TU lecturers. The Society also organizes numerous events to promote dialogue between science and industry, thereby introducing the university to the broader public. The Society’s permanent program also features a “Think Tank of Innovation” and the “Walter Höllerer Lectures” attracting as many as 1,000 guests.
FROM SCIENCE SHOWS TO SCIENCE SLAM

TU Berlin offers a broad spectrum of opportunities for the general public to participate in scientific discussions and to learn about ongoing research projects. More than 5000 school children visit the “TU Info Days” to learn about what our university has to offer. In the “Long Night of Science”, one of the capital region’s prime science events, TU Berlin has for years been the most popular venue for guests. Once each year, 30 science facilities are open for the public to enjoy visits to laboratories or a science slam. Key lectures with Nobel laureates continue to attract up to 1200 guests to our Audimax lecture hall. On the occasion of the traditional New Year’s reception, the President greets guests from the spheres of politics, industry and diplomacy. Course auditors and guest students benefit from lectures and other learning opportunities offered by the university.
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