

BSc Programs and Courses

Country	University name	BSc			WEBpage	
		name	semesters	courses		lecturers
GB	Cardiff School of Engineering, Faculty of Electrical Engineering, United Kingdom	Electrical and Electronic Engineering (B.Eng), Electrical and Electronic Engineering (M.Eng)	6	Fundamentals of micro-and nanotechnology (3th year of BEng, MEng, compulsory)(10 ECTS) To introduce the students to the basic principles of semiconductor and integrated circuit technology and to apply these to the solutions of integrated circuit systems. Aims: to introduce the principles of micro-and nano-scale fabrication in the context of integrated circuit (IC) technology and micro-mechanical systems (MEMS). Application of basic principles to the design and realisation of IC and MEMS-based problems in current and future systems. To develop an appreciation of the way in which current materials theory and technology is used to solve problems in IC and MEMS systems.	Dr. R. Perks, lecturer of the course and admissions tutor of electrical and electronic engineering studies PerksRM@cardiff.ac.uk	http://www.engineers-international.com/ http://www.engin.cf.ac.uk/teaching/struct/module.asp?modno=EN3817 ; http://www.cardiff.ac.uk/engin/degreeprogrammes/undergraduate/electrical-electronic/schemestructure/index.html ; http://www.cf.ac.uk/engin/currentstudents/courseinformation/undergraduate/electrical-electronic-engineering.html
		Electrical and Electronic Engineering (B.Eng), Electronic and Electrical Engineering (M.Eng), Mechanical Engineering (M.Eng), Medical Engineering (M.Eng)	8	Fundamentals of nanomechanics (MEng, optional) (10 ECTS) The fundamental principles of nanomechanics and its application to the solution of advanced engineering problems.	prof. F. Borodich, lecturer of course, Chairman of the Cardiff Nano-Science and Nano-Engineering Group	http://www.engin.cf.ac.uk/teaching/struct/module.asp?modno=EN4630
GB	Heriott-Watt University, School of Engineering and Physical Sciences, Edinburgh, United Kingdom	Electrical and electronic engineering (BEng, hon/BSc)	8 or 6	Electronics and Microsystems engineering (4th year)		http://www.undergraduate.hw.ac.uk/eps/eece/courses/
		Nanoscience (4 years BSc hon); Nanoscience is the study of phenomena on a scale ranging from the wavelength of light down to the size of atoms. It is a rapidly developing field continually producing fascinating results in many different fields of study. This course is based on physics but includes content from chemistry and biology to give an important appreciation of how all the sciences have new effects to be observed and new applications to be discovered.	8	Physics I- Mechanics and waves Investigative techniques 1 laboratory EPS maths 1 Principles in chemistry Physics II- fields and forces Investigative techniques 2 laboratory Chemical reactivity Photonics and quantum mechanics EPS maths 3	Prof. John Wilson, course director of Mphy and Bengineering Physics courses J.I.B.Wilson@hw.ac.uk	http://www.undergraduate.hw.ac.uk/courses/N/ http://www.postgraduate.hw.ac.uk/courses/view/78/

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				Circuits and analysis Introductory biology 1 Thermal physics and relativity Experimental lab and communication Introductory biology 2 EPS maths 4 Physical mathematics 1 Electromagnetism and optics Dynamics and statistical physics Chemistry of materials Quantum theory and spectroscopy Solid state physics Physical mathematics 2 Quantum theory and solid state Nanoscience primer Microstructures and properties of Laboratory project 1 Statistical, nuclear and particle Numerical modelling and data Advanced physical instrumentation Laboratory project 2		
GB	Imperial College, Department of Materials, London, United Kingdom	Technical module for Electrical and Electronic Engineering (BEng, MEng) Technical module for Electrical and Electronic Engineering (BEng, MEng) Optional course for Materials science and Engineering (BEng), Materials Science and engineering (MEng)	BEng 6, MEng 8	Advanced electronic devices MEMS and nanotechnology Polymers, composites and nanocomposites Nanomaterials I and II	Lecturer: Dr.K. Fobelets dr. Z. Durrani, dr. A. S. Holmes Responsible for undergrad. edu., lecturer of nanomaterials: dr. Jason Riley, jason.riley@imperial.ac.uk. Lecturers: R.Hill, A.R.Boccaccini; Nanom.: Dr. M.P.Ryan, dr. J.Riley, prof. M.M. Stevens	http://www3.imperial.ac.uk/courses/undergraduatesyllabuses http://www3.imperial.ac.uk/courses/undergraduatesyllabuses http://www3.imperial.ac.uk/pls/portallive/docs/1/27079703.PDF http://www3.imperial.ac.uk/pls/portallive/docs/1/27079703.PDF
FIN	Helsinki University of Technology	Bachelor of Science (Technology), only in Finnish	6	info only in Finnish		http://www.eps.hw.ac.uk/research/EPS_Seminars.html
FIN	Tampere university of Technology	Bachelor of Science (Technology) BScTech, Electrical Engineering, Materials Engineering	6	only Finnish, info only in finnish		http://www.tut.fi/public/oppaat/opas2008-2009/kv/laitokset/seminars: http://www.ac.tut.fi/aci/courses/ACI-51006/ http://www.eps.hw.ac.uk/research/EPS_Seminars.html

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DK	Technical University of Denmark, Department of Micro- and nanotechnology	<p>Nanotech BSc DTU Nanotech provides a lot of exciting courses on the bachelor level available for all students at DTU. The courses are organised in three categories, the Micro, LabChip and Nano course of studies. We recommend that you take either Micro-1, Labchip-1 or Nano-1 on the 4th semester. Notice, that the Nano-1 course is nano technology aimed at students not on the Physics & Nanotechnology line. These courses introduce you to the exciting knowledge within their fields. To work in practice and get hands on experience about these matters you can follow one of the three week courses we offer - for example the Micro-3W, Nano-3W or LabChip-3W courses - there you will work in teams together with researchers at DTU Nanotech. On the 5th semester we recommend that you take the course 33254 Micro & Nano fabrication. This course is an introduction to the science and technology of fabrication of micro & nanosystems. The programme contains three 3-weeks-courses.</p>	6	<p>FN physics and nanotechnology</p> <p>FN experimental projekt</p> <p>Micro 3 week course</p> <p>Nano-1</p> <p>LabChip-1</p> <p>Micro-1</p> <p>LabChip 3 week course</p> <p>Nano and microfabrication</p> <p>Nano 3 weeks course</p> <p>Micro-3 week course</p>	Acting director: Mogens Rysholt Poulsen, mogens.poulsen@nanotech.dtu.dk	<p>http://www.nanotech.dtu.dk/English/Education/Bachelor.aspx</p> <p>http://www.eps.hw.ac.uk/research/EPS_Past_Seminars.html</p> <p>seminars:</p> <p>http://www.eps.hw.ac.uk/research/EPS_Seminars.html</p>
D	Technical University of Ilmenau, Elektrotechnik und Informationstechnik	<p>Micro- Nanoelektronik und Elektrotechnologie BSc (Studienswerpunkt 2) info only in German language After the basic courses (mathematics, physics, etc.), there is a specialization for micro-nano. The courses are only of the specialization and the choosable modules. Submodul 1: Werkstoffe und Technologien der Mikro/nanoelektronik, Submodul 2: Mikro-, nano- und leistungselektronik (Micro-, nano- and power electronics)</p>	7	<p>Micro- und Halbleitertechnologie 1 (Micro- and semiconductor technology 1)</p> <p>Halbleiterbauelemente 2 (Semiconductor building blocks 2)</p> <p>Entwurf integrierter systeme 1 (Design of integrated systems 1)</p> <p>Elektroniktechnologie 1 (Electrotechnology 1)</p> <p>Mikro- und nanoelektronik (Micro- and nanoelectronics) Modul 1</p> <p>Mikro- und nanosensorik (Micro- and nanosensors) Modul 1</p> <p>Funktionswerkstoffe Modul 1</p> <p>Werkstoffpraktikum (laboratory) Submodul 1</p>	Information: Dipl. Ing. Claudia Lutz, referat-ei@tu-ilmenau.de; prof. Dr. rer.nat.habil. Jochen Seitz, jochen.seitz@tu-ilmenau.de	<p>http://www4.tu-ilmenau.de/studienplan/studienplan.php?stg=BA_Elektrotechnik%20und%20Informationstechnik%20-%20Studienschwerpunkt:%20Mikro-,%20Nanoelektronik%20und%20Elektrotechnologie%20(Version%202008)&art=</p>

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				Technologiepraktikum (Technology laboratory) Submodul 1 Optoelektronik (Optoelectronics) Submodul 1 Mikro- und nanomaterialen (Micro- and nanomaterials) Submodul 1 Werkstoffdesign Nanotechniken Submodul 1 Bauelemente praktikum (electronic devices/building blocks laboratory) Submodul 2 Mikor- und halbleiter technologie 2 (Micro- and semiconductor technology 2) Submodul 2 Leistungsbaulemente (Power building blocks) Submodul 2 Auslegung elektronischer komponenten (Description of electronic components) Submodul 2 Stromversorgungstechnik (Power/current supplying technique) Submodul 2 Integrierte analoge schaltungen (Integrated analogue devices) Submodul 2		
DK	Technical University of Denmark, Department of Micro- and nanotechnology	Nanotech BSc DTU Nanotech provides a lot of exciting courses on the bachelor level available for all students at DTU. The courses are organised in three categories, the Micro, LabChip and Nano course of studies. We recommend that you take either Micro-1, Labchip-1 or Nano-1 on the 4th semester. Notice, that the Nano-1 course is nano technology aimed at students not on the Physics & Nanotechnology line. These courses introduce you to the exciting knowledge within their fields. To work in practice and get hands on experience about these matters you can	6	FN physics and nanotechnology FN experimental projekt Micro 3 week course Nano-1 LabChip-1	Acting director: Mogens Rysholt Poulsen, mogens.poulsen@nanotech.dtu.dk	http://www.nanotech.dtu.dk/English/Education/Bachelor.aspx http://www.eps.hw.ac.uk/research/EP_S_Past_Seminars.html seminars: http://www.eps.hw.ac.uk/research/EP_S_Seminars.html

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		<p>follow one of the three week courses we offer - for example the Micro-3W , Nano-3W or LabChip-3W courses - there you will work in teams together with researchers at DTU Nanotech. On the 5th semester we recommend that you take the course 33254 Micro & Nano fabrication. This course is an introduction to the science and technology of fabrication of micro & nanosystems. The programme contains three 3-weeks-courses.</p>		<p>Micro-1</p> <p>LabChip 3 week course</p> <p>Nano and microfabrication</p> <p>Nano 3 weeks course</p> <p>Micro-3 week course</p>	
CH	University of Neuchatel, Institute of Microtechnology	<p>BSc in Micro- and nanotechnology The list contains only the courses of the 3rd year, as it was only available. For all the compulsory courses, there are exercisecourses, too.</p>	6	<p>General chemistry (optional)</p> <p>Optics</p> <p>Image processing</p> <p>Photonics</p> <p>Micro and nano</p> <p>Signals and systems</p> <p>Projectmanagement</p> <p>Silicon microfabrication processes</p> <p>Data structures (optional)</p> <p>Introductory mathematical science</p> <p>Chemistry of polymers (optional)</p> <p>Shape recognizing</p> <p>Detection and regulation (control)</p> <p>Physics of solids</p> <p>Electrodynamics (optional)</p>	<p>Director of institute: prof. N. de Rooij, nico.derooij@unine.ch</p>
CH	École Polytechnique Fédérale de Lausanne, School of Engineering	<p>BSc in Microtechnology (Microengineering) Microengineering has been a feature of the EPFL for 20 years. The high level research activities and university training of engineers and microengineering researches are based on a range of multidisciplinary areas. The three central pillars are: micro- and nanotechnologies; optics; robotics</p> <p>These skills are developed in the two IMT sites for different fields of application : "green industrialisation" at Neuchâtel and "biomedical technologies" at Lausanne.</p> <p>The EPFL offers cutting edge technologies, research projects, academic partnerships and many kinds of particularly competitive collaborative relationships. From the 1st January</p>	4	<p>Linear algebra (1 ECTS)</p> <p>Analysis I and II (2 ECTS each)</p> <p>General chemistry (0,5 ECTS)</p> <p>Electrotechnique I and I (1 ECTS)</p> <p>Geometry (1 ECTS)</p> <p>Intorduction to materials science (0,5)</p> <p>General physics I and II (0,5 ECTS)</p> <p>Statics and dynamics (1 ECTS)</p> <p>Elements of microelectronic design and CAD I and II (1 ECTS each)</p> <p>Informatics I and II</p>	<p>Willy Maeder, willy.maeder@epfl.ch</p> <p>http://sti.epfl.ch/page74504.html</p>

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		<p>collaborative relationships from the 1st January, 2009, Microengineering Institute of the University of Neuchâtel merged with EPFL to start a new education. The IMT will therefore become the biggest academic institute of Microengineering in Switzerland, with 17 laboratories and more than 450 members.</p>		Project work 1, 2, 3 and 4 (each semesters)		
<p>École Polytechnique Fédérale de lausanne, School of Engineering</p>	<p>BSc in Electrical engineering, branch of Electronics and microelectronics It starts after a one-year preparatory course. The Electronics and Microelectronics orientation offers a fair coverage of subjects related to the design of integrated electronic devices, components and systems. The proposed core courses provide solid foundations on analog/RF, digital, and mixed-signal integrated circuit design using advanced technological processes, including the use of electronic design automation software tools commonly available in industry. In addition, a well-defined set of optional concentration courses offers the way to enlarge the scope in the direction of smaller and smaller devices as well as complex systems with embedded software. The list contains only the specialization- and the (micro-nano) optional courses, not the basic common courses.</p>	<p>4</p>	<p>Devices and basic analogue structures (2 ECTS)</p>	<p>Director of the Section of Electrical engineering: prof. Maher Kayal, maher.kayal@epfl.ch</p>	<p>http://sti.epfl.ch/page73534.html</p>	
			<p>Integrated digital circuits (2 ECTS)</p>			
			<p>Microelectronics devices (2 ECTS)</p>	<p>Mihai Adrian Ionescu</p>		
			<p>Sensors (4 ECTS) (opt.)</p>	<p>Philippe Renaud, Giovanni Boero</p>		
<p>H</p> <p>Budapest University of Technology and Economics, Department of Electronics Technology, Department of Microelectronics</p>	<p>Electrical Engineering BSc Microsystems OR Circuit Modules (6th and 7th semesters)</p>	<p>7</p>	<p>Microelectronics design (common)</p>			
			<p>Electronic production technology and quality assurance (common)</p>			
			<p>Monolyte techniques (microelectronics)</p>	<p>Dr. Marta Rencz, head of Department of Microelectronics, rencz@eet.bme.hu</p>		
			<p>Microelectronics laboratory (microelectronics)</p>			
			<p>Circuit modules and electronic appliances (circuit modules)</p>	<p>prof. Gabor Harsanyi, head of Department of Electronics Technology, harsanyi@ett.bme.hu</p>		
			<p>Technological processes and their quality (circuit modules)</p>			

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NL	Twente University of Technology, Enschede	<p>The bachelor programme consists of compulsory courses, projects and laboratory experiments. Approximately 1/3 of the programme is devoted to practical work and 2/3 to course work. In the projects the theory of the course work is integrated and here explicit evaluation takes place of competencies or success factors of EE engineers. Extensive use is made of computer support in the teaching process with Teletop as the Course Management System used throughout the University.</p>	6	only general info about them		http://el.utwente.de/ , http://www.bachelor.utwente.nl/ ; http://www.utwente.nl/en/education/2009/bachelor/
		<p>The first year of the programme focuses on EE fundamentals and design of basic building blocks. The first year gives a general introduction to EE and the level of education. If the first year is passed successfully it is anticipated that 2nd and 3rd year can be completed successfully also. In the second and third year system design is covered in more depth, with clear focus on the profile of the Department. The first year is mainly taught in a block system, where courses are completed before new courses start. In the second and third years a term-system is used and each term has a particular focus. In the third year the Minor has to be completed. Electrical engineering (BSc) Elektrotechnik The programme starts with the basic principles. The education puts a great emphasis to practice, groupwork, problem solving. The students have to learn and do research individually, too, which is more efficient. The individual projects can be done at industrial firms. The student has to choose a major and a minor specialization. The minor can be a similar to the major, to deepen the knowledge in a special field, or can be a totally different one, to widen their acquaintance.</p>				