

Why is the University of Luxembourg an attractive destination for exchange students from the US?

Whether you aspire to a career in academia, industry or government, the experience of immersion in a foreign culture and an international network of contacts is an asset. This document provides an overview of Luxembourg, its University, and selected teaching and research programs. The focus is on the merits of the University of Luxembourg as a destination for students enrolled at an American University who would like to study for some time abroad. All programs presented in this document were selected on the basis that they are partially or entirely taught in English, and that answers in English are accepted in the classroom and in exams.

The document has the following sections:

1.	Luxembourg	2
2.	The University of Luxembourg.....	2
3.	Economics and Finance.....	3
4.	European Law	5
5.	Learning, Languages, and Psychology	6
6.	Spatial Development and Analysis	8
7.	Information and Computer Science	9
8.	Systems Biology	10

1. Luxembourg

The Grand Duchy of Luxembourg is a small tri-lingual country of 480,000 inhabitants that is situated in the heart of Europe, but that has a distinctive and strong national culture. Luxembourg city and its surroundings, has been a settlement for over 2000 years, and UNESCO declared a part of it a world heritage site; it features a Roman aqua-duct and catacombs. One visitor from the US summed a walk through the capital up as 'this is better than Disney'. Since the 1950's Luxembourg played a key role in the process of European Unification. It is the birth place of Robert Schumann, one of the founding fathers of the European Union, and most of the main European Institutions such as the European Commission, the European Court of Justice, the European Parliament, and the European Investment Bank have a seat in Luxembourg.

Luxembourg is a wealthy country, with a high quality of life – a typical example of a European welfare state. Due to favorable tax and banking legislation it is an important financial center with representatives of most major European and global players, including the Bank of New York. Thus, Luxembourg offers attractive employment opportunities. Due to the European Institutions and the many banks, the population of Luxembourg city is international, cosmopolitan, and open. It is situated just two hours on the train from Paris, Brussels, Strasbourg, and Cologne – an ideal base from which to explore its larger neighbors and the rest of Europe!

2. The University of Luxembourg

The University of Luxembourg (UL) is a young and dynamic institution, which was founded in 2003. The university buildings are located in or close to Luxembourg city and are easily accessible by public and private transport. The University organizes free access for students to concerts, theatres, and sightseeing tours including to Brussels, and to the EU institutions. The University is small and personable, and aims to stay small. In 2007 there were about 150 faculty, and 500 practitioners teaching at UL, and just over 4000 students. Courses at the Master level usually have maximal class sizes of 15 to 25 students. The academic year is split into two semesters – the 1st semester from mid-September until mid-December (the exams take place in January); and the second semester from February until June (the exams take place in June).

Luxembourg, and the UL in particular, offer a 'safe haven' for English-speaking students to explore continental Europe and to learn a foreign language. Perhaps most importantly, the University goal is to maintain a low student to faculty ration, to ensure close contacts between students and their teachers. The tutorial system, uncommon in continental Europe, allows for further personal supervision and support on all questions of academic or personal nature.

Another attractive distinction of the UL from other European Universities is that it has three official languages, rather than just one: French, German, or English. Teaching in three languages, the flexibility of most faculty to accept English answers both in the classroom and in exams, regardless of the course language, and a good language learning support system together offer an exceptional terrain for conquering French or German as a working language. We also offer

language courses to support students studying in a foreign language. The student and the faculty bodies are highly international (85 and 26 nationalities, respectively). A further distinctive feature is that due to a legal mobility requirement all students at undergraduate level have to study a semester abroad – hence there is plenty of experience on how to make the most of student exchanges shared between students, faculty, and the administration.

Graduates from abroad will find of interest that the UL is a research-based institution with a strong connection between research and teaching. Faculty is frequently involved in EU cooperative projects, opening a window for the engaged student to networks of European and international cooperation. There are three faculties: the Faculty for Law, Economics and Finance; the Faculty of Letters, Social Science, Arts, and Education Science, and the Faculty of Science, Technology and Communication.

The following sections outline study programs, which draw together the strengths of the country, the distinctive features of the University, and the diverse staff and student bodies that make up UL.

3. Economics and Finance

Research and teaching in economics and finance benefit from Luxembourg's position as a strong financial centre in Europe: most international banks have a branch in the capital. This offers ideal grounds for exchange students to enjoy a semester of teaching with strong contributions from practitioners who can describe the workings of European financial markets; moreover, internship possibilities abound.

Research in economics and finance at the Faculty of Law, Economics and Finance focuses on a broad range of economic and financial areas. In finance, research interests include asset pricing, risk management, financial econometrics, law and finance, investment performance evaluation, international financial integration and exchange rate markets. Research in economics focuses on regional economics, integration, spatial economics, migration and applied micro-econometrics. The size of the academic and scientific staff in economics and finance is quickly increasing and reflects the strong commitment of the university in these areas.

Bachelor in Economics and Management

The Bachelor in Economics and Management provides a basic knowledge of the theoretical foundations and methods of economics and management. The Bachelor provides a suitable basis for advanced studies, or professional careers in banking or management at large in the public or private sector. The program is also suitable for students of related disciplines including political science, law, history, and finance in order to open up new perspectives on modern economics that governs much of our daily lives. With this aim, the fifth semester includes courses specializing in corporate and banking law and accounting practices. The sixth semester offers courses relating to public administration including environmental economics and an initiation to the field of finance. Courses are in French and English, and a good proportion of text books and course materials are

available in English, but some basic comprehension of French and an interest in improving French language skills is recommended. In exams, students may answer in the one of the three official languages of the UL they feel most comfortable in. For more information please contact the study director Arnoud.Bourgain@uni.lu.

Bachelor in Management

The Bachelor in Management is tailored more towards the formation of practitioners ready to launch themselves in a career in banking, insurance, trusts, accounting, or corporate management at the end of their degree. Semesters four and five offer choices for specialization in management pertaining to insurance, banking, or corporations. The program is designed around a set of complementary courses from academics and practitioners who offer unique insights on Luxembourg and European practice. Semester six offers internship opportunities, together with a guided analysis of the experience in form of writing and defending a report. Teaching is in English, German and French; English predominates in the last two semesters, and English answers are accepted in all exams. For more information please contact the study director Nicolas.Jonard@uni.lu.

Master in Financial Economics

The Masters in Financial Economics is suited for all who aspire to a career in finance, banking or the insurance sector, as well as for students interested in further research towards a Ph.D. The courses are designed for students with a bachelor degree in economics and/or management. Faculty selects applicants largely based on their prior knowledge of economics. Over half of the classes are in English, but some basic comprehension of French and an interest in improving French language skills is recommended. In exams, students may answer in the one of the three official languages they feel most comfortable in. This two-year program in Financial Economics offers a unique combination theory and practice: the first set of courses provide a solid foundation of the theory underlying financial microeconomics, financial macroeconomics and econometrics, which then help to gain a deeper understanding of applied finance in courses focusing on tools and practices for decision-making under uncertainty. Insights gained are relevant to all areas of finance, banking and insurance.

The program will include seminars given by experts of the most active banks in Luxembourg such as Dexia RBC and Caisse d'Epargne. Those seminars focus on very specific and practical contemporary issues in finance. The second year of the Master also allows student either to do a master thesis on a more academic issue or to undertake a 3 to 6 month stage in one of the financial institutions of Luxembourg. Further details on the program can be found at http://www.uni.lu/formations/fdef/master_in_financial_economics_master_academique.

Master in Entrepreneurship and Innovation

This program was developed jointly by the UL and the Luxembourg Chamber of Commerce, in order to strengthen the links between the academic and business worlds. The setting of Luxembourg, a small, but at the same time very open and international place is ideal for generating and combining new ideas, and creative experiments with daily practical realities of business life, for successful new businesses to emerge. The one-year program is offered to

students with backgrounds in traditional management related areas, as well as in the humanities, natural science. Diversity is viewed a strength. The main language is English. Teaching is largely case-based, with internationally renowned faculty leading discussion on managerial implications of latest academic research, focusing on diverse approaches to writing business plans and problem-solving. Other teaching blocks include marketing, finance, individual skills (such as presentation and negotiation), and a practical work project in a firm that leads to a Master Thesis. Applicants will be selected based on their CV. Further information can be found at http://fdef.uni.lu/index.php/fdef/entrepreneurs_innovation or by contacting Nicolas.Jonard@uni.lu

4. European Law

Research and teaching at the law department focuses on European, transnational, and comparative law. Research and teaching thrives on the proximity of the European Court of Justice (ECJ), the Court of First Instance (CFI), the European Court of Auditors (ECA), the European Investment Bank (EIB) and the European Investment Fund (EIF), and Luxembourg's many international banks. The law faculty is international, and also engages renowned experts from academia and practitioners from leading international banks and law firms to teach in their courses. Several of the twenty seven judges (one for each Member State) and eight advocates-general of the European Court of Justice, who in their role of interpreting EU law on contentious points play an analogous role to the judges of the Supreme Court in the US, are actively involved in teaching in courses at our University. Teaching is in English and French, and relies on state-of-the-art interactive teaching methods. Possibilities to organize internships at the end of a semester can be explored upon request.

Master in European Law

The Masters in European Law also provides options to specialize in European Litigation, Banking and Financial Law, or Criminal Law. Following courses on European Litigation, students will be exposed to litigation procedures in various policy fields. Courses on European Banking and Financial Law and European Criminal Law offer a multi-disciplinary perspective on the intersection of economics and law. Courses address European and transnational cooperation in criminal matters, protection of financial interest of the European Community, white collar crime, financial fraud, money laundering, counterfeit, cyber crime and customs fraud. The different courses are organized in modules, which can be combined flexibly.

The areas for possible specialization in the Master Program on European Law also reflect the strong areas of research in the Faculty of Law, Economics and Finance. For more information, please see <http://fdef.uni.lu/index.php/fdef/droit/master>

5. Learning, Languages, and Psychology

Multi-lingual and multi-cultural modern societies require new expertise in areas such as communication, education and human resource management. Both the Bachelor program in Educational Sciences and the Master in Learning and Development in Multilingual and Multicultural Contexts (MA multi-LEARN) program challenge learning and teaching from diversity within societies. The Luxembourg setting provides an ideal context to study learning and development in situations of linguistic and cultural diversity.

The Bachelor in Educational Sciences

The program strives to develop competences for the teaching profession. The course encourages and thrives on the participation of students with prior qualifications from a wide range of disciplines. The courses are multi-lingual, and the teaching-language can be adapted to the need of the students. Classroom interventions and any other input from students, including exams, can be brought in any of the four official languages of the program (English, French, German, and Luxembourgish). The English language is widely spread across the program activities. However, prior basic knowledge of and an interest in deeper acquisition of a second language is recommended.

The program deploys a research-oriented curriculum about learning and development and places strong emphasis on collaborative inquiry projects to develop the ability to analyse learning processes in context. Research methodologies are encouraging teacher students to act in an investigative or problem-solving way and to base their decisions on research-driven and rational argumentations. The course has four main objectives:

Learning how to learn: Developing teachers who act as experts on learning is tackled by co-constructing theoretical concepts to analyze one's own and other's learning.

Developing in a community of learners: students participate in various communities that draw on material, technological, conceptual, and social resources across boundaries, i.e. learning in transdisciplinary modules across academic disciplines, interacting through multimodal media across semiotic domains and learning-for-teaching across different educational contexts.

Being a responsible actor and author: students are accountable for their own development. Their "voices" are encouraged through authentic individual and collective productions.

Growing and developing: learners engage in a developmental process where they are allowed to work on their own concerns and projects. The creation, documentation, reflection and evaluation of personal and joint initiatives, as well as the adoption of a critical stance towards one's own practice is encouraged and supported by academic staff and in a tutorial system.

For further information please contact Prof. Dr. Charles Max or Erik Lautenschlager (tel.: +352 4666449536); web: <http://bpse.uni.lu>; e-mail: bpse@uni.lu

The Masters on Learning and Development in Multi-lingual and Multi-cultural Contexts

This Masters program prepares for a Ph.D. in education and (inter-)disciplinary fields related to linguistic and cultural diversity, learning, and human development. It also provides a valuable asset for careers in the public and private sectors relating to diversity management, vocational training, the teaching profession, exchange programs, multimedia publishing, group-oriented marketing and advertising. Apart from English, some prior knowledge and interest in deepening French or

German is required. The MA multi-LEARN provides you with a setting helping you to improve your language skills in terms of scientific writing, presentations, and working in, on and with multilingual situations.

The program combines a case-based study approach with a trans-disciplinary exploration of four domains:

Activity & Development: the individual development through activities and social interactions within changing cultural contexts.

Language, Learning, Literacy: the development of language(s), pluri-lingualism and literacy.

Media, Interaction, Design: the role and organization of media (e.g., Information and Communication Technology) and mediation (e.g., design) in processes of learning and development.

Discourse, Identity, Politics: the interplay of identity, discourse and the politics of language and education. Students can select to specialize in one of these domains. Courses and data-based seminars that focus on problem-solving are combined with training on tools for organizing learning experiences (e.g. electronic platforms), organizing information (e.g. references and sources), and analyzing and exploiting developmental data as diverse and dynamic as multilingual websites, VJing events or interactional processes for research purposes beyond the individual MA work. A mentoring system and interships within private and public cooperating local and international partners are key-element to the successful development of the students. Furthermore, the program offers opportunities for comparing diverse approaches to analyzing learning and development through study trips to France, Germany and the UK. The distinctive organization and tri-lingual nature of the program open a unique window to understanding the European scientific landscape from three nationally and discursively different accounts. The MA multi-LEARN is grounded in and contributes to research work accomplished within the Unit for Sociocultural Research on Learning and Development of the UL and the corresponding PhD-programme. MA work is constantly linked with research projects, e.g., inquiring discourse dimensions of science learning, developmental data-bases and leadership development from diversity. Detailed information on the program (organization & content) and its recent activities is available through the MA multi-LEARN website:

http://www.uni.lu/formations/flshase/master_academique_multi_learn, or by contacting the scientific director of the program Ass.-Prof. Dr. Gudrun Ziegler Gudrun.Ziegler@uni.lu .

Masters in Psychology: Evaluation and Assessment

At the UL, the focus of research and teaching in psychology is on educational measurement and applied cognitive science. In the age of life long learning the need for reliable approaches to evaluate learning abilities, professional competences and personality profiles is becoming ever more pressing. The Master in Psychology: Evaluation and Assessment provides students with the theoretical and methodological basis for the development and implementation of scientific assessment tools; the processing and interpretation of collected data; and the presentation of such analyses of diverse target groups. Courses are taught in two languages: French and English. An in-depth knowledge of French is required, as, depending on the student body, the majority of classes are usually held in French. Possibilities for internship at the end of the semester could be explored upon request.

Courses provide the theoretical basis for assessing cognitive abilities, professional competence, social and emotional competences, and personality diagnostics. Cross-cultural differences in approaches to assessment and evaluation and cross cultural differences in evaluation results using the same methods on different cultural groups are recurring questions that arise within several courses. Courses explore on theories on scoring and models for behavioural analysis. Measurement tools including tests, questionnaires, computer-assisted testing, and qualitative evaluation methods are discussed. Courses on statistics introduce the use of multivariate models and hierarchical linear models for testing. For enrolment in the courses, prior undergraduate degrees in psychology, cognitive science or education science are helpful.

The corresponding research unit of the University of Luxembourg has 20 researchers. Its main objective is to contribute to the production of new scientific results in the domain of cognitive science and to apply these new (or already existing) results to the domain of education and learning, mainly through the construction and use of new assessment or learning tools. Current research projects in the domain of educational measurement seek for the assessment of basic learning processes at different levels across the lifespan (e.g. reading and listening comprehension, mathematical problem solving, scientific literacy, interaction between social and cognitive competencies evaluated in populations of children, adolescents and adults). Some areas which may be suitable for exploring student-driven collaborative research include development, application and evaluation of quantitative methods in organizational psychology, and structural and functional neuro-image analysis and measurement. For more information please see http://www.uni.lu/formations/flshase/master_in_psychology_evaluation_and_assessment_master_academique

6. Spatial Development and Analysis

The Master in Spatial Development and Analysis aims at preparing students for the increasing demand for consistent spatial analysis and development in the context of setting sustainable development goals. The program benefits from vivid exchange through guest lectures and internship opportunities with closely located key institutions including the of European Institutions such as EUROSTAT, the European Investment Bank, and the Co-ordination Unit of the European Spatial Planning and Observation Network. Courses allow a high degree of interaction due to small class sizes (a maximum of 25 students will be selected). The course provides training that is relevant for subsequent occupations in organizations including public administrations and planning agencies, consulting firms, cross-border institutions, chambers and associations, and demographic and economic observatories. Students in regional economics, environmental sciences, sociology, human geography are encouraged to apply. For further information please consult the website www.spatial.uni.lu, or e-mail geo@uni.lu, or phone +352 4666446327.

7. Information and Computer Science

The research and teaching activities in the area of information and computer science at UL are shaped in close collaboration with the public and private sectors, in which interests in finance and telecommunications industries stand out. The major fields of research are: Advanced Software Systems, Communicative Systems, Intelligent and Adaptive Systems, and Security and Trust. The notions of Security, Trust and Reliability are part of the strategic priorities of the University of Luxembourg and are considered as transversal to the four fields of interest.

Bachelor in Computer Science

This Bachelor is completed in six semesters. Undergraduate exchange students from the US could join the 5th or 6th semester which are entirely taught in English. Both semesters offer four alternative specialization options that prepare for the job market and one option that is an ideal ground for continued study. The courses are designed with a view to key job market needs including in the service and data processing companies, public administration, consultancy, financial service firms. The program's sixth semester serves to prepare a Bachelor thesis, which can be either completed as part of an internship in a firm, or within a research group of the UL. For further information, please consult the website <http://wiki.uni.lu/bpinfo> or contact Sonja.direnzo@uni.lu.

Master on Information and Computer Science

The Master Program thrives on a close link between research and teaching. There are five possible areas of specialization:

In the area of *Advanced Software Systems*, research and teaching is concerned with the stepwise lifecycle development of modern software-intensive distributed systems. These are typically embedded in and interact with highly dynamic technical environments. The ultimate aim is to enable the development of reliable software product lines based on model driven engineering and automated verification and validation tools. Areas of interest shared with researchers at UIUC include analysis and design patterns in software engineering.

The area of *Communicative Systems* comprises both work on 'information transfer' and 'communicative systems'. Information transfer stands for the transmission of information over potentially complex channels. We use models based on information theory and stochastics. Communicative Systems focuses on the modeling and simulation of new generation of networks (ad-hoc, sensor networks and hybrids), the development of reliable protocols and middleware. One focus is on prerequisites for the creation of reliable heterogeneous networks constituted of different network types including static, mobile, ad-hoc, peer-to-peer or grid.

Research and teaching on *Intelligent and Adaptive Systems* focuses on approaches to deal with complex and dynamic environments given limited resources and incomplete or uncertain knowledge. We investigate the theoretical foundations and the algorithmic realization of systems performing complex problem solving with a high degree of autonomy (intelligent), and exploiting learning to deal with opaque and changing contexts (adaptive). The major areas of interest are evolutionary computing, data and text mining, knowledge representation and uncertain inference. Areas of common interest with UIUC include genetic algorithms using meta-heuristics, and the use of software actor-agent models.

The classic concept of *Security and Trust* focuses on maintaining confidentiality and integrity of messages largely by using ciphers and based on signatures. However, in open communication systems additional threats appear as attacks may hinder the functionality of a system, for example by unwanted restrictions of access to published information or services, or they may lead to the complete take-over of a system by an attacker. Reformulating the concept of security in the advent of intelligent attacks requires addressing not only the protection goals of confidentiality, integrity, availability and accountability, but also better taking into account the concept of Trust. Trust (or, symmetrically, distrust) is a particular level of the subjective probability with which an agent assesses that another agent or group of agents will perform a particular action, both before he can monitor such action (or independently or his capacity ever to be able to monitor it) and in a context in which it affects his own action. [Gambetta] Trust modeling and management is achieved through various facets such as multi-agent systems, logic, optimization of strategies, game theory, and others.

There is also the possibility to specialize in *Bioinformatics* for systems biology (see below).

For more information please contact Pascal.Bouvry@uni.lu for research matters or Christoph.Schommer@uni.lu for educational aspects.

8. Systems Biology

The availability of entire sequences of genomes of organisms provides the basis for better understanding the links between molecular- and physiological processes and environmental factors, rather than just studying each of these aspects in isolation. At the UL, one main focus of research and teaching activities is to investigate major human diseases such as cancer, atherosclerosis, type 2 diabetes and Alzheimer's in such a 'Systems Biology-based approach. This involves using and integrating data from the complementary 'omics' approaches: genomics, transcriptomics, proteomics, metabolomics and physiomics.

The students enrolled in the Master in Systems Biology will learn to think at the 'systems level' and understand and be able to apply all related technologies. Gaining familiarity with bioinformatics tools to integrate the huge data sets generated with each technique – at each of the 'omics' levels is a key aspect of the program. Students will spend at least 45% of their time doing practical work in wet or computer laboratories. For specialized technologies, the UL is working with public partner institutions in Luxembourg and France, such as the CRP-Santé for micro-arrays, the CRP-Gabriel Lippmann for the proteomics, and the Institute of Genetics and Molecular and Cellular Biology in Strasbourg for the Mouse Clinic, will be involved.

The program prepares students for further research in academia or for a career industry or government. The program is designed for a maximum of 18 students per year. All courses are in English. The curriculum includes introductory courses on molecular biology and biochemistry, general courses such as on patenting and research in the private sector, and specialized courses on different aspects of systems biology.

For more information please contact: Carsten.Carlberg@uni.lu or see www.uni.lu/formations/fstc/master_in_integrative_systems_biology_master_academie