Programme Curriculum for Master Programme in Innovation and Spatial Dynamics

1. Identification

<table>
<thead>
<tr>
<th>Name of programme</th>
<th>Master Programme in Innovation and Spatial Dynamics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope of programme</td>
<td>60/120 ECTS</td>
</tr>
<tr>
<td>Level</td>
<td>Master level</td>
</tr>
<tr>
<td>Programme code</td>
<td>EAISD</td>
</tr>
<tr>
<td>Decision details</td>
<td>Board of the School of Economics and Management, April 17, 2015</td>
</tr>
<tr>
<td>Amendment details</td>
<td>2015-09-25</td>
</tr>
</tbody>
</table>

2. Programme description

Innovation and its spatial dynamics, which in short means the impact on regional economic growth, are areas of intense research in several countries and scholars at the departments cooperating in this programme are close to the international frontier. A combination between the areas in a master programme meets a need in analytical and planning work for ability to combine knowledge about economic modelling, and the role of innovation and entrepreneurship with empirical evidence about economic change across time and space.

Innovation is fundamental in the process of economic growth. Theories of economic growth for long have sought a comprehensive model that along with capital and labour also encompass technical change. In a long-term perspective, innovations have repeatedly restructured the prevailing technology, conceptualized alternatively as techno-economic paradigms, general purpose technologies or synonymously. These changes have gone along with a geographical reallocation of the leading centres of economic activity.

Innovation can broadly be defined as the commercialization of new combinations. Commercialization involves entrepreneurship and actors. Analytical and planning work on economic growth ought to take account of its interaction with innovation and entrepreneurship as well as its dynamics over time and space.

The sustainability of economic growth is today questioned due to environmental factors, such as climatic change. According to a widely accepted view modern economic growth is different from economic growth in the pre-modern era, when population increase eventually(outspaced production. However, institutional and technological change and other historical circumstances have caused significant fluctuations in the rate of growth also during the modern period. An assessment of the future sustainability of economic growth therefore entails a perspective on its historical record.
The aim of the master programme is to provide knowledge about theories of economic growth and innovation; insights in the historical evidence of economic growth and innovation; insights in the spatial dimensions of economic growth and innovation; insights in the entrepreneurial activity and commercialisation of innovations. Further, the aim is to make sure that students acquire the ability to critically to assess reports and scientific literature related to economic growth and innovation as well as the ability to carry out investigations and analyses concerning economic growth and innovation.

**Career opportunities**

As a master of Innovation and Spatial Dynamics you will qualify for any profession that requires capability of intellectual judgement, evaluation and analysis of economic facts and ideas, and good communication skills. Graduates of this programme are particularly equipped for analytical and planning work in government and international organisations as well as non-government organisations and consultancy.

**Connection to further studies**

Successful completion of the programme will enable students whom choose to specialise in economic history to apply to doctoral programmes in economic history, and student whom choose to specialise in social and economic history to apply to doctoral programmes in social and economic geography.

**3. Learning outcomes**

The programme builds on previous studies at the undergraduate level in social science. In accordance with the Higher Education Ordinance, a Master of Science (120 credits) is awarded to students who at the completion of the programme accomplish the following:

**Knowledge and understanding**
- demonstrate knowledge and understanding in the field of Innovation and Spatial Dynamics, including both broad knowledge in the field and substantially deeper knowledge of certain parts of the field, together with deeper insight into current research and development work; and
- demonstrate deeper methodological knowledge in the field of Innovation and Spatial Dynamics.
- demonstrate a comprehensive knowledge of theories of growth and innovation.
- be trained to understand the process of economic growth and the structures underlying it. In particular, this concerns the role of innovations and how different social, economic and spatial contexts influence processes of innovation and entrepreneurship.

**Skills and abilities**
- demonstrate an ability to critically and systematically integrate knowledge and to analyse, assess and deal with complex phenomena, issues and situations, even when limited information is available;
- demonstrate an ability to critically, independently and creatively identify and formulate issues and to plan and, using appropriate methods, carry out advanced tasks within specified time limits, so as to contribute to the development of knowledge and to evaluate this work;
- demonstrate an ability to clearly present and discuss their conclusions and the knowledge and arguments behind them, in dialogue with different groups, orally and in writing, in national and international contexts; and
- demonstrate the skills required to participate in research and development work or to work independently in other advanced contexts.
- demonstrate an ability to work individually as well as in groups with students from different cultures in order to solve practical problems as well as to manage a more extensive project.
- be trained to communicate their own and others results, both in writing and orally. Emphasis will be put on the ability to present results clearly, both to specialists and non-specialists in the field.
Judgement and approach
- demonstrate an ability to make assessments in the field of Innovation and Spatial Dynamics, taking
into account relevant scientific, social and ethical aspects, and demonstrate an awareness of ethical
aspects of research and development work;
- demonstrate insight into the potential and limitations of science, its role in society and people’s
responsibility for how it is used; and
- demonstrate an ability to identify their need of further knowledge and to take responsibility for
developing their knowledge.
- be able to independently read, interpret and assess current research in growth and innovation as well
as advanced professional reports and analyses.

Independent project (degree project)
For a Master of Science (120 credits) students must have completed an independent project (degree
project) worth at least 30 higher education credits in the field of Innovation and Spatial Dynamics,
within the framework of the course requirements. The independent project may comprise less than 30
higher education credits, but not less than 15 higher education credits, if the student has already
completed an independent project at the second level worth at least 15 higher education credits in
their main field of study.

Students have the possibility to leave the programme after one year and in accordance with the Higher
Education Ordinance obtain a Master of Science (60 credits). The degree is awarded to students who
at the completion of the programme accomplish the following:

Knowledge and understanding
- demonstrate knowledge and understanding within the field of Innovation and Spatial Dynamics,
including both a broad command of the field and deeper knowledge of certain parts of the field,
together with insight into current research and development work; and
  – demonstrate deeper methodological knowledge in the field of Innovation and Spatial Dynamics
- be trained to understand the process of economic growth and the structures underlying it. In
particular, this concerns the role of innovations and how different social, economic and spatial
contexts influence processes of innovation and entrepreneurship.

Skills and abilities
- demonstrate an ability to integrate knowledge and to analyse, assess and deal with complex
phenomena, issues and situations, even when limited information is available;
- demonstrate an ability to independently identify and formulate issues and to plan and, using
appropriate methods, carry out advanced tasks within specified time limits;
- demonstrate an ability to clearly present and discuss their conclusions and the knowledge and
arguments behind them, in dialogue with different groups, orally and in writing; and
- demonstrate the skills required to participate in research and development work or to work in other
advanced contexts.
- demonstrate an ability to work individually as well as in groups with students from different cultures
in order to solve practical problems as well as to manage a more extensive project.
- be trained to communicate their own and others results, both in writing and orally. Emphasis will be
put on the ability to present results clearly, both to specialists and non-specialists in the field.
**Judgement and approach**
- demonstrate an ability to make assessments in the field of Innovation and Spatial Dynamics, taking into account relevant scientific, social and ethical aspects, and demonstrate an awareness of ethical aspects of research and development work;
- demonstrate insight into the potential and limitations of science, its role in society and people’s responsibility for how it is used; and
- demonstrate an ability to identify their need of further knowledge and to take responsibility for developing their knowledge.

**Independent project (degree project)**
For a Master of Science (60 credits) students must have completed an independent project (degree project) worth at least 15 higher education credits in Innovation and Spatial Dynamics, within the framework of the course requirements.

**4. Course information**
The program has the following structure:

The preceding paragraphs outline the main themes of the master programme Innovation and Spatial Dynamics. The themes are clearly of primary relevance for the 21st century and a master in Innovation, and Spatial Dynamics will be well prepared for pursuing analytical work and investigations in private as well as public governance and publishing. Properly completing two years study at the programme will give the student a master's degree. However, the student can also choose to complete only the first year of the programme and receive a one-year master’s degree.

The programme is provided by the departments of Economic History, Business Administration, and Human Geography. Besides taking the courses given jointly by professors from the three departments, students have to take optional courses given by the participating departments. A list of optional courses is presented below.

During the second part of the spring semester students carry out an independent research task and write a paper. The student chooses a topic and formulates one or more research questions that are relevant within the broad range of the programme. The cooperating departments pursue high quality research in areas closely related to the programme and are well equipped for the supervision of students' thesis work.

In addition to the programme, the core courses and the paper writing, the student also has to take optional courses. At the School of Economics and Management optional courses will be offered but these can also be taken at other faculties of Lund University or at another university. However, the optional courses should be of relevance for the programme and guidance for the choice of optional courses are provided in consultation with the student.

The table gives an overview of the structure of the programme. All courses encompass 7.5 ECTS credits, and are taught at part-time during half a semester. Normally the student thus studies two courses in parallel.
Joint courses

Economic Growth over Time and Space (7.5 ECTS)
Innovation and technical change is central to long-term economic growth but it is treated very differently in economic theories. In a comparative manner this course presents technical change within major theoretical approaches: neoclassical growth models, endogenous growth models and evolutionary structural models. Particular attention is given to an economic historical model combined with a spatial theoretical framework of regional trajectories of growth. The model is based upon complementarities around innovations forming development blocks that are driving processes of structural change. Thus, the interplay between innovations, economic transformation and economic growth is studied with an emphasis on major carrier branches both historically and in contemporary times. Innovations are analysed in relation to variations over time in, e.g., relative prices, entrepreneurial activity, investments, labour demand and employment. It is shown how this, at an aggregated level, shows up in phases of spatial convergence and divergence, respectively.

Furthermore, factors governing the diffusion of innovations - including the interplay between economic and institutional change - are studied. In this context the economics of spatial clustering and localised externalities is central. A related aspect is how clusters and regions contribute to the characteristics of national technological shifts and economic growth.

Research design (7.5 ECTS)
The course presents the student with research methods used within the social sciences in general, and within economic history specifically. The course will carefully deal with the importance of source criticism to any well-planned research. It will then, through a detailed examination of various quantitative and qualitative methods, discuss the validity of these methods to various research questions and data. The overarching goal of the course is to provide students with the tools necessary to prepare a well-structured research assignment.
Economics of innovation (7.5 ECTS)
How innovations are defined, measured, and occur are the issues of this course. Which concepts and estimates are in use? Which are the social, institutional and economic conditions that foster their emergence? Which is the role of economic incentives and of culture for the ability and propensity of individuals to engage in innovation?

The estimation of innovation raises several problems of measurement and about the use of typology. A basic distinction is made between innovations that come up with something entirely new, such as radical or horizontal innovations, and innovations that improve something already in use, labelled incremental or vertical innovations. The programme and course can draw on work at the School with a new and much recognized database on innovations. However, different indicators exist and proxies or substitute measures, such as patents and investments in research and development (R&D), are often used. The meaning and properties of these different indicators are examined.

The course also studies certain aspects of innovations, for example: their distribution on small, middle-sized, and big firms as well as on firms of different ages and sectors; the classification of their origin, the type of knowledge needed for their realization, the time needed for their development, the character and extent of collaboration they need, the character and amount of public support provided. Some of these aspects are typically related to regional innovation systems, a concept for comparative analysis of innovative performance.

Innovation, Energy and Sustainability (7.5 ECTS)
Modern economic growth has been sustained over two centuries but will it remain sustainable? Environmental problems, in particular climate change, may cause backlash with severe consequences for human civilization. With the widening of modern economic growth to low-income countries, such as China and India, this dismal outlook seems substantiated. However, according to one theory, transformations of industrial economies to service economies reduce the exploitation of natural resources and environmental damage. Other theories have confidence in technological change that, for example, will develop renewable and sustainable energy sources. This course puts these and related theories into the perspective of the long-term evidence. Particular emphasis is laid on the present state of the arts as regards the economics of energy technology as well as the institutional incentives and constraints for innovation in this field.

Econometrics (7.5 ECTS)
This course provides the student with a fundamental understanding of the theoretical and methodological problems associated with quantitative approaches to economic history. The first part of the course consists of theory and methods relating to multivariate linear regression, limited dependent variable regression and basics of time series analysis. It also considers how to apply these methods, with examples of how such methods are used in economic demography and economic history. This part also introduces computer software (STATA or comparable) for quantitative analysis. In the second part of the course, students analyze a quantitative problem using actual data from economic demography or economic history, and report results in individual papers. The course is mandatory for the two-year master.

Small Business Economics and Entrepreneurship (7.5 ECTS)
Entrepreneurial activity is basically about finding innovations and managing their commercialisation. This is a highly organized activity within the modern large-scale enterprise, carried out by research laboratories, development sections and so forth. However, the individual entrepreneur and small-scale business firm often have a particularly dynamic role in innovation. Today, it is widely accepted that entrepreneurship and small businesses contribute to societal development and economic growth. One part of the course focuses on macro level aspects such as patterns of the sectorial distribution of small businesses and the role of financial systems for their emergence and performance. Another concentrates on the micro level with case studies. The key elements of the entrepreneurial process are
studied, such as the recognition of business opportunities, and the mobilization of resources in order to exploit opportunities in a market. The course is mandatory for the two-year master.

**Comparative analysis of economic change (7.5 ECTS)**
This course introduces major issues in long-term macroeconomic analysis and how these have been approached in research. Explorative methodologies versus hypothesis testing are discussed in relation to different scientific approaches. It is studied how data are obtained, analysed and interpreted by researchers. Basic concepts of quantitative analysis are introduced and applied in exercises. The course is mandatory for the two-year master.

**Optional courses**
Below are listed those optional courses that primarily can be included in the degree from this programme. The timing of the optional courses differs somewhat from year to year and the details are laid out at the introductory week of the programme. Some of the courses may, due to timing, be less compatible with the programme schedule. However, solutions can be found and the student is therefore recommended to discuss the choice of optional courses with the programme director. There are also other courses that can be accepted as optional courses on request by the student.

**Business Administration**
**Optional courses provided by the Department of Business Administration:**

*BUSN41 Organizational Development (7.5 ECTS)*
This course provides knowledge about how and why organisations change. It deals in particular with techniques for intervention in organisations used by managers and consultants. Studied are both descriptive approaches for the understanding of change and development, as well as more normative problems considering the information of those concerned by organizational change. The course is given during the second part of the autumn semester.

*BUSN45 Strategic Change and Leadership, (7.5 ECTS)*
The course takes an interpretive perspective of strategic change, organizational culture, identity and leadership and addresses the role of meanings, values, symbolism and identity as crucial elements in organizational life, including corporate change and leadership. Communication and the expression, negotiation and translation of ideas, beliefs and understandings are seen as key elements in making organizations work and in managerial action.

**Optional courses provided by the Department of Economic History:**
**The global economy and long-term economic growth (7.5 ECTS)**
This course studies historical processes of growth, convergence and divergence in the global economy over the past two centuries. Two different approaches are applied. One considers theories of economic growth, about how production is generated by capital and labour and the level of technology. The other takes the perspective of the international economy and studies international trade, migration, and movements of capital. The course is given during the first half of spring semester and is recommended for first-year students.

*Population and living standards (7.5 ECTS)*
This course deals with the interplay between population and living standards in a long-term perspective. It focuses on three broader themes. In the first, different models of the preindustrial economic demographic system are studied, and the legacy of these models (e.g. Malthusianism) and their relevance today is assessed. Different demographic indicators of living standards, such as life expectancy, infant mortality and demographic responses to economic fluctuations, are discussed and compared with other well-being indicators in an assessment of the long-term global development of
standard of living. The second theme deals with the importance of population dynamics, especially fluctuations in fertility, and thus cohort size, on living standards in industrial society. The third theme focuses on the role of families and households in providing welfare and security of its members. Both the development over time and global comparisons are central in this theme. The course is given during the second half of autumn semester and is recommended for first or second-year students.

Institutions, economic growth, and equity (7.5 ECTS)
This course studies the relations between institutions, modern economic growth, and equality. Problems in the world of today are taken as a point of departure for a historical analysis that covers countries and regions in different parts of the world. Four themes are focussed. One is about the emergence of institutions such as property rights and markets, and their role for economic growth. The second is about the importance of the distribution of resources for institutional development. The third is about the importance of the growth of knowledge and education for the creation of equality of opportunity. The fourth is about the emergence of the modern welfare state as well as current challenges to its future. The course is given during the first half of spring semester and is recommended for first or second-year students.

Advanced time series analysis (7.5 ECTS)
The course gives an introduction to basic concepts within time series analysis. The univariate analysis of time series in this course is based upon ARMA/ARIMA models. Multivariate time series analysis is based on VAR models. Non-stationary time series are analysed using unit root tests, co-integration methods and VEC models. Students have the choice of specialising in the analysis of volatility models or non-stationary panel data models. Theoretical studies are interwoven with practical applications in financial economics and macroeconomics.

EKHM50 Internship (7.5 ECTS)
An internship could be accounted for course credits if the student presents a report about the activity and discusses its relevance for the aims of the programme. It is independent from the university’s teaching and normally the student should independently find and apply for the internship. The length of the internship should correspond to at least two months full-time work. The provider of the internship could be of different kind but could normally be in the categories government agency, intergovernmental or supranational organization, non-governmental organization, or a private firm.

Optional courses provided by the Department of Human Geography:
SGEM21 Geographies of Economies: Transforming Places, People and Production, 7,5 credits
This advanced level course in economic geography focuses on some of the most important socio-economic challenges that today’s cities, regions and nations face. How does globalisation affect lives and livelihoods in particular places? Why do some regions continue to grow and prosper, whereas other regions struggle with industrial restructuring? What are the drivers of such changes and how can firms and regions cope with them? These themes are analysed from different theoretical perspectives to examine the underlying forces that shape the trajectories and transformations of economic spaces.

SGEG50 GIS: Geographical Information Systems for the Social Sciences, 7,5 credits
The course provides an introduction to the rapidly growing field of GIS for students interested in applying GIS in their research or work. The course is interdisciplinary in scope and appropriate for students from a diversity of backgrounds. This would include students from the social sciences, the humanities, economics, sustainability and development studies as well as students from a range of other disciplinary and professional backgrounds. The course introduces students to some key conceptual debates and developments in GIS, and it provides an introduction to the most important theories and practises of GIS. During the course, the students will learn about the potential applications of GIS within various fields of study.
SGEM23 Geographies of Economies: Urban and Regional Planning 7.5 credits
This course focuses on some of the most important socio-economic challenges that urban and regional planning has to meet, and how these are addressed and dealt with in different planning contexts. With the background in contemporary economic geography theory, these challenges are analysed, aiming at a deeper understanding of the underlying economic forces that impact the scope and directions in urban and regional planning. Meetings with practitioners in the field of planning, through visits, guest seminars and excursions, are important elements to relate theory and practices.

5. Degree
Upon completion of the programme a Master of Science (120 credits) major Innovation and Spatial Dynamics (filosofie masterexamen, huvudområde: innovation och rumslig dynamik) will be awarded in compliance with the National Higher Education Ordinance (SFS 2006:1053).

Students can also decide to finish after the first year with a Master of Science (60 credits) with a major in Innovation and Spatial Dynamics (filosofie magisterexamen, huvudområde: innovation och rumslig dynamik).

6. Admission requirements and selection criteria
An undergraduate degree (BA/BSc) with at least 60 ECTS credits in business administration, economics, economic history, history, social and economic geography or statistics or the equivalent. English 6.

Selection criteria
Selection will be based on academic merits from university studies and a Statement of Purpose in which applicants should state their reasons for applying to the programme.

7. Other information
Courses at the School of Economics and Management are graded according to the criterion-referenced principal grades A-F:

<table>
<thead>
<tr>
<th>GRADE</th>
<th>POINTS</th>
<th>CHARACTERISTIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100-85</td>
<td>Excellent</td>
</tr>
<tr>
<td>B</td>
<td>84-75</td>
<td>Very good</td>
</tr>
<tr>
<td>C</td>
<td>74-65</td>
<td>Good</td>
</tr>
<tr>
<td>D</td>
<td>64-55</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>E</td>
<td>55-50</td>
<td>Sufficient</td>
</tr>
<tr>
<td>F</td>
<td>49-0</td>
<td>Fail</td>
</tr>
</tbody>
</table>

A distinguished result that is excellent with regard to the following aspects – theoretical depth, practical relevance, analytical ability and independent thought.

A very good result with regard to the above mentioned aspects.

The result is of a good standard with regard to the above mentioned aspects and lives up to expectations.

The result is of a satisfactory standard with regard to the above mentioned aspects and lives up to expectations.

The result satisfies the minimum requirements with regard to the above mentioned aspects, but not more.

The result does not meet the minimum requirements with regard to the above mentioned aspects.
It is up to the teaching professor to decide whether the credits of a course should be converted into a total of 100 points for each course, or if the scale above should be used as percentage points of any chosen scale instead.

*Disciplinary actions against plagiarism*

The University views plagiarism very seriously, and will take disciplinary actions against students for any kind of attempted malpractice in examinations and assessments. The penalty that may be imposed for this, and other unfair practice in examinations or assessments, includes suspension from the University.