Digital Transformation of the World Economy

SYLLABUS
SEMESTER II, ACADEMIC YEAR 2018-2019
INSTRUCTOR: DR. MILOVANTSEVA
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COURSE PREREQUISITES

There are no prerequisites. While a background in any relevant discipline would be helpful, a sincere interest in a conceptual understanding of the material is all a student needs. Advanced level of English is instrumental for doing well in this course.

COURSE TYPE AND METHODS OF INSTRUCTION

This course is elective. All lectures and seminars are face-to-face engagements. Possible field trips may be included in lieu of lecture meetings, subject to sites and time availability.

COURSE DESCRIPTION

This course provides interdisciplinary perspective and practical experience on how information and communication technology (ICT) has been transforming the economy. The main feature of this course is that students will engage in digital economy itself, not just learn about it or discuss others participate in it.

We will cover a little bit of material across key issues of the process of world’s digital transformation, and the goal is to connect ideas together and engage in the digital economy through a group project. Topics include critical components of digital ecosystem, place of information technology in the theories of and its impact on economic growth, role of information technology in evolving economic relations, and socioeconomic implications of digital transformation. The emphasis is on (a) appreciating the effect of emerging technologies on global economy and (b) on developing skills for taking advantage of economic opportunities afforded by digitalization.

LEARNING OBJECTIVES

The primary objective is to encourage critical thinking about the impact of digitalization on economic processes worldwide and its role in the society. This will involve connecting economic theory with other disciplines. A second objective is to gain skills in collaborative writing and to learn information literacy. This will include group work in digital environment. And a third objective is to engage in digital economy itself. This will be achieved through working on a team
entrepreneurial project via putting together several basic components of a start-up investment proposal.

The knowledge and skills gained in this course will contribute to students’ toolkit necessary for (a) anticipating and shaping the impact of emerging technologies and (b) reacting quickly to changing circumstances in rapidly evolving digital economy.

The emphasis will be on active learning. At times, students may be asked to complete the readings or watch video materials before class to get more out of learning activities integrated with in-class meetings.

*Caveat.* This course covers key exciting innovative developments in today’s economy. However, it will not attempt to provide an in-depth literature survey of the field, nor will it include detailed technical discussions of each technology or aspire to achieve a comprehensive review of emerging technologies. We will jump around several topics where a common theme – digital transformation – is what holds everything together.

**LEARNING OUTCOMES**

At the end of the semester, students will be knowledgeable about:

1) The nature and extent of the digital transformation,
2) How to evaluate various challenges that digital transformation of world economy presents, and
3) The likely global implications of digital economy evolvement.

**COURSE TEXTS**

There is no textbook in this course. However, readings and video materials will be assigned for each session. We will make our best effort to help find required and optional materials and ask you to let us know right away if provided internet links for resources are no longer useful.
GRADING SYSTEM

Essay (50%)  Individual or group paper in the format of a draft of some basic elements of start-up investment proposal. Due: at sixth seminar.
Exam (50%)  Take-home final exam in the format of final start-up investment proposal. Due: TBA.

GUIDELINES FOR KNOWLEDGE ASSESSMENT

Ability to effectively communicate your ideas and articulate relevant and potent questions is an important skill to have in the digital era. Attending classes, learning online materials and taking active part in class discussions and activities is the best way to hone this skill and to maximize your overall course performance.

Attendance and participation are not compulsory; however, they will be tracked: during each lecture you will be asked to perform some tasks and at the end of each lecture - to write three take-home points. These data will be used in assigning your final grade. That is, if you attend and actively work on at least 12 lectures, your final course grade will be increased by one point.

COURSE POLICIES

It is students’ responsibility to be thorough familiar with university’s plagiarism policy. Cheating and disruptive behavior in any form are never allowed. The instructor reserves the right to alter any topics covered or assignments with appropriate notice. Information about changes and additional materials will be announced in class and posted to class cloud drive or emailed. The institutional university policies will be used for resolving any organizational or administrative issues not included in this syllabus. Although, I enjoy interacting with students after class, this is not always feasible due to other professional obligations. I would prefer for students to contact me via email (nmilovantseva@hse.ru) for arranging personal or group consultations.

EQUIPMENT SUPPORT

General up-to-date equipment, adequate for slides presentation and video viewing.
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<tr>
<th>#</th>
<th>Topic</th>
<th>Academic hours</th>
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<tr>
<td>1</td>
<td>Introduction</td>
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<td>2</td>
<td>Economic theory for digital transformation</td>
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<td>Creating conditions for and driving digital innovation</td>
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<td>Advances in computing</td>
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<td>Blockchain and cryptocurrency</td>
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<td>10</td>
<td>Platform economy</td>
<td>2</td>
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<td>11</td>
<td>Future of work</td>
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<td>12</td>
<td>Startup Village; Skolkovo Innovation Center</td>
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<td>13</td>
<td>Technology and economic development. Digital inequalities</td>
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<td>14</td>
<td>Cybersecurity. Cyberegulation</td>
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<td>15</td>
<td>Environmental impact of digital transition</td>
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<td>16</td>
<td>Cases: Balance between tradition and technology; new monopolies</td>
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COURSE TOPICS DESCRIPTION

1. INTRODUCTION
Welcome and course requirements. Broad overview of industrial revolutions and digital transformation. Reasons for increasing concern about the rate and direction of change in digital technologies. Why digital transformation matters for the word economy? Does rapid innovation mean the change is inevitable? What are the consequences of the direction of change?

Required Reading


Optional Materials


2. ECONOMIC THEORY FOR DIGITAL TRANSFORMATION
3. Creating Conditions for and Driving Digital Innovation

The link between technological change and economic policy making. Policies designed to create conditions for digital innovation. Startups as drivers of digital innovation.

Required Reading


Assignment

Enroll in Computer Science 101 at https://lagunita.stanford.edu/courses/Engineering/CS101/Summer2014/about

Optional Materials


4. ADVANCES IN COMPUTING
Exponential progress of processing power. Revolutionary changes in materials. Connecting power of computing to advances in other fields. Application, generality, computing power and potential of quantum computing.

Required Reading


Written notes for lecture Computer Hardware (Week 3) Computer Science 101 at https://lagunita.stanford.edu/courses/Engineering/CS101/Summer2014/about

Optional Materials

5. ADVANCES IN COMMUNICATION

Required Reading


Optional Materials


6. BIG DATA

Required Reading


http://www.pewinternet.org/2019/01/16/facebook-algorithms-and-personal-data/

Optional Materials


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### 7. ARTIFICIAL INTELLIGENCE. MACHINE LEARNING


*Video viewing:* ‘Do You Trust This Computer?’

*Required Reading*


*Optional Materials*


Andrew Ng’s online course on Deep Learning, Stanford (Review)

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### 8. BLOCKCHAIN AND CRYPTOCURRENCY

international financial system. Motivations for cryptocurrency from regulatory, social and individual points of view. The future of cryptocurrency and blockchain. Non-monetary use of blockchain. Potential of blockchain technology across industries.

*Required Reading*


*Optional Materials*


9. ALTERNATIVE FINANCE


*Required Reading*


*Optional Materials*


10. PLATFORM ECONOMY
Rebalancing relationship between physical products and digital platforms. Key technologies. Economic consequences. The way companies like Alibaba, Amazon or Facebook operate.

Required Reading


Optional Materials


11. FUTURE OF WORK

Required Reading


**Optional Materials**


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12. **STARTUP VILLAGE**

Field work at Skolkovo Innovation Center: [https://startupvillage.ru/en/](https://startupvillage.ru/en/)

*Catch-up week, no reading*

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13. **TECHNOLOGY AND ECONOMIC DEVELOPMENT**


**Required Reading**


**Optional Materials**


Wessels, B. (2013) 'The reproduction and reconfiguration of inequality: Differentiation and class, status and power in the dynamics of digital divides'. In M. Ragnedda and G. W. Muschert


The Future of Global Value Chains Business as Usual or “A New Normal”? STI Policy Note, September 2017, OECD.

**14. CYBERSECURITY. CYBER-REGULATION**

Important terms in cyber security. Location, types and classification of data. History and evolution of cyber threats. The kill chain. Preventing and diffusing breaches.

*Required Reading*

https://pdfs.semanticscholar.org/65e3/4c9bb7330f3f6378394b5d308b6a323947d.pdf


*Optional Materials*


**15. ENVIRONMENTAL IMPACT OF DIGITAL TRANSITION**

Required Reading


Optional Materials


16. CASES: BALANCE BETWEEN TRADITION AND TECHNOLOGY; NEW MONOPOLIES
In this lecture we will discuss application of economic theory to cases of new monopolies, broadband strategies, audio-visual digital transformation and mobile service digital transformation.

Required Reading


Optional Materials
