NYU | TANDON SCHOOL OF ENGINEERING

Department of Technology Management and Innovation

MG-GY 7953 Global Innovation
Spring 2018

Professor: Tom Helling

Contact Details: th930@nyu.edu
917-593-0946 (mobile)

Office/Hours: By Appointment
5 MetroTech Center, LC401

Class Schedule: Alternate Saturdays @ 8:30 am -12:55 pm
(*see dates of class per session dates below*)
Room: Rogers 203

Course Pre-requisites: Graduate standing

Course Description:

This course focuses on global technology-enabled innovation. Topics covered include accessing global sources of innovation, coordination and organization of activities worldwide, new product development on a global basis, the role of revitalized global R&D, the growing prominence of IT, virtual organizations and e-business in global innovation, and the role of alliances and linkages with customers, suppliers, and other third parties.

Course Objective:

This is a course designed to provide the student with knowledge of the current theories and practices related to managing innovation in multi-national firms. Students in this class will study the ways in which theory, sector, geography, and organizational culture all serve to shape the framework in how innovation is conducted in a variety of ways.

Course Structure:

This course introduces the latest and most relevant thinking, research and best practices, with an emphasis on learning based on the experiences of actual firms around the world. Individual and team-based project work is an important part of this course. Class interaction is vital to understanding many of the central themes and issues in the area of global innovation.

Grading will be focused on in-class participation, group presentations, a final exam and an individual term research project. Students are expected to actively participate in class discussions, therefore students must have completed assigned readings and be prepared to present when called upon.

Readings:

We will be discussing a number of research papers, case studies and relevant reading material in addition to the assigned text during this course. Students are expected to purchase the text and assigned cases, as these are required readings. There will be a number of other readings posted throughout the term that will be clearly marked as either required or recommended.

Required Text(s):
Ten Types of Innovation: The Discipline of Building Breakthroughs; Keeley, Pikkel, Quinn, and Walters, Wiley, 2013 ISBN-10: 1118504240 ISBN-13: 978-1118504246

Required Case Readings (HBS): http://cb.hbsp.harvard.edu/cbmp/access/72878575
(see session pages for individual assignments)

Course Assignments and Grading:

In-Class Activities and Participation	20% of Final Grade
Group Presentation on Assigned Topic	20% of Final Grade
Final Exam	20% of Final Grade
Individual Research Project	40% of Final Grade

In-Class Activities, Assignments, Attendance and Participation:
Class attendance, advance preparation and in-class participation are vital in this course. This includes the standard pre-class preparation of all the session readings and cases, which is expected of all participants. There may also be unassigned activities announced throughout the term that will be considered in this grade as well.

1. Students must adhere to the University's attendance policy. Students should alert the professor prior to class as to any absence, but only university-approved absences will avoid a potential impact on grades. On-time attendance is expected, and ongoing lateness will also affect the grade.
2. Class preparation involves assigned reading and case study preparation in advance of the class.
3. Evaluation of your in-class participation includes the quality and timeliness of your contribution to the discussion.

Group Presentation Assignments:
The instructor will determine the student assignments to each team group. The format for your group presentation assignment will be an in-class presentation on an assigned topic in approximately 30 minutes, accompanied by the presentation document. No formal write-up in research paper format will be required. Presentations will take place throughout the term. All presentations should be prepared in PowerPoint, Keynote, or Prezi, and you are expected to submit them in Assignments/ Group Presentation.

Group teams will have until noon, Friday, February 9th (prior to the second class session) to choose two companies within the same sector, and submit for approval. Choices for both sector and companies will be "first come, first served" – each group team needs to choose unique companies and a unique sector. Companies of focus should also differ from those we will discuss in class and case studies.

Group Presentation Expectations:

Sector Presentation expectations:

The sector presentation should address a complete sector analysis using the concepts shared in class and the readings.

The presentation should discuss issues relating to geographic location, economic performance, and possible societal and political considerations of the sector, and also how the sector contributes to the global high-tech industry.

The presentation should examine the competitive landscape of firms within the sector.

Firm Presentation expectations:

The presentation will examine and compare/contrast two firms within the assigned sector.

Topics in the single firm presentation should include (but do not need to be limited to) the following:

What are their global strategies?

Their business model?

How do they transfer/share knowledge?

How diversified are these companies, and how does this diversification contribute to their innovation efforts?

What are the two companies' scale of international presence? (Present a visual layout of the company's global endeavors/presence where appropriate and available)

Does their international footprint contribute to their innovation efforts? What challenges might it present?

Identify and detail their acquisitions, and ascertain the importance of these to their innovation efforts.

Which companies form their competitors and collaborators?

Most importantly, how do these firms ***conduct*** innovation? Please do not focus exclusively on the innovative products and services developed by the company (the end product of their efforts) – it is the means they utilize to foster innovation, and the process used to accomplish their goals in this effort that you must focus on.

How is their organization structured to drive innovation?

Do they value diversity?

How do they protect IP?

How do they conduct R&D?

How do they communicate across virtual teams?

Final Exam:

The final exam will be given in the final class of the term, on Saturday, May 5th.

Individual Term Projects:

This project should relate to a topic you identify to be of interest in the context of the course.

Students will choose a topic for their term project and submit no later than noon on Friday, February 16th. Along with the topic, this first deliverable must include a strong thesis statement, and a brief abstract describing your research paper of no more than 250 words. The instructor will approve or request clarification regarding your topic by February 23rd.

Deliverables and Due Dates:
Students must meet the following deliverable due dates with the required content. Each stage will be considered in terms of the overall project grade.

1. Topic choice, *preliminary* thesis statement (the thesis is expected to evolve with your research effort) and abstract (250 words max): by noon, Friday, February 16th
2. Updated topic, thesis statement, abstract – plus an Outline, and Research Reference List (APA style): by noon, Friday, March 23rd
3. Research Paper Draft (not required, but *highly recommended* – must represent a complete draft with all required sections to be considered): by noon, Friday, April 13th
4. The research paper will be due at midnight on Friday, April 27th, and ***no submission after this time/date will be accepted***.

There is flexibility in the choice of topic, but the following criteria *must* be met:

- It is interesting enough to motivate you to conduct serious research,
- It relates to the course theme (see ***Course Description***), and
- Has implications for how modern ***global innovation*** is conducted.

For example, if your choice of topic is "*Virtual Learning in Global Teams*", it is expected that you summarize the key points in the literature on global teams, how it relates to R&D or innovation strategy (i.e. what are the pros/cons of using global teams, the process of virtual learning in such teams, implications for firms), offer your thoughts and opinions and substantiate it with at least a few interesting examples.

The paper should ***NOT*** be a company profile, report or case study. The research paper is expected to be more conceptual; a synthesis of thought streams, and backed up by ***prior research*** and examples in the field of study.

Criteria used in grading the term project assignment:
There are several key aspects and goals of this project that you must keep in mind as you develop your paper and conduct your research.

- The paper is expected to add your own insights to the analyses of other writers. Independent thinking is desired and encouraged, as long as clear links are shown to prior work – i.e. how the idea came about from your other readings and/or experience.
- The paper must be well organized. Ideally, it would have an introduction with a thesis (argument), a framework supporting this thesis, and your findings and general conclusions. You might also include fruitful avenues for future research.
- Spelling and grammatical errors are to be corrected prior to submission.
- The paper must be directly relevant to the themes of discussion in this course.
- The paper draws upon relevant readings from reputable sources. These should include peer-reviewed publications as a primary source of information.
- The paper is thoroughly and properly documented, in terms of fact checking and in text citations.

- Your main ideas are supported with citations from your bibliographical research, and is written in your own words.

A grading rubric has been developed to help guide you in meeting these goals.

Rubric:

- Contains appropriate peer-reviewed sources and citations of those sources (10%)
- Includes a strong introduction clearly stating the purpose of the research paper (10%)
- Well-written; no typos; grammar is correct; clarity of points made (10%)
- Structure of the paper is clear – intro, thesis, supporting/dissenting research, analysis of the research and opinion as to what the data is suggesting and why, conclusion, bibliography (20%)
- Conclusion effectively summarizes the paper, its findings and **supports the original thesis or hypothesis** (this is critical!) (10%)
- The paper must include elements of the concepts gleaned from class and the readings in its content (20%)
- How innovation is *conducted* (this represents the *process* of innovation, not the result) in the framework of the global corporation must be woven into the topic (20%)
- **Plagiarism, lack of citations, absence of appropriate sources, will result in an automatic failure of this assignment and potentially the course. The Turnitin tool will be utilized when you submit this to "Assignments".**

Research Support:
Many students may feel they have not had a lot of experience in writing a true research paper, or may have questions as to what that involves – do not hesitate to ask me any questions regarding the expectations around this assignment, and do so well in advance of the due date.

One resource you should strongly consider utilizing is the NYU Writing Workshop -
NYU Writing Workshop: Polytechnic Tutoring Center (PTC) @ 373 Jacobs Academic Building
Office Hours (during the academic year):
Monday through Thursday: 10 a.m. - 8 p.m.; and Friday: 11 a.m. - 6 p.m.

Another resource is the Library System. There are numerous sources of contact and seminars that you can participate in to help in this process.

I provide a video explanation with a presentation to help with understanding what my expectations are regarding this research paper. Please look for these in NYU Classes, and contact Anwesha and me with any questions.

Course Topic Outline

Session 1:
DATE: Saturday, January 27, 2018

Topic: Global Innovation: Course Expectations, Overview and Overall Perspectives
Session Objectives: Complete understanding of the course and expectations; how companies view and pursue innovation; the many aspects of what represents innovation; various innovation frameworks and theories; the impact of globalization and technology, particularly those involving artificial intelligence and their impacts on analytics and automation.

Required Readings (complete these readings prior to class):
"*Ten Types of Innovation*"; Parts 1 (Innovation), 2 (Ten Types of Innovation), 3 (More is Mightier) and 4 (Spot the Shifts); pgs. 1-127

Keeley Wilson and Yves Doz; "*Ten Rules for Managing Global Innovation*"; Harvard Business Review, October 2012

Thomas H. Davenport and Rajeev Ronanki; "*Artificial Intelligence for the Real World*"; Harvard Business Review, January/February, 2018

In Class Case Analysis (read in advance for in-class activity):
Stefan Thomke and Barbara Feinberg; "*Design Thinking and Innovation at Apple*"

Assignment Due:
Group Presentations - Teams will have until noon, Thursday, February 8th to choose two teams and a correlating sector, and submit for approval.

Individual Research Paper - Topic choice, *preliminary* thesis statement (the thesis is expected to evolve with your research effort) and abstract (250 words max) are due by noon, Friday, February 16th

Session 2:
DATE: Saturday, February 10, 2018

Topic: Global Innovation: The Organization and Innovation
Session Objectives: Explore how organizations enable innovation; the challenges that established companies face in pursuing innovation; discuss a series of elements that successful companies implement to drive innovation: strategic planning, implementation of technology, systemic supports, organizational diversity, developing a competitive advantage, and alternative organizational structures.

Required Readings (complete these readings prior to class):
"*Ten Types of Innovation*"; Part 5 (Leading Innovation); Part 6 (Fostering Innovation); pgs. 128-229

Scott D. Anthony and Evan I. Schwartz; "*The Transformation 10 Strategic Change Rankings for 2017*"; Innosight, 2017

Pascal Visée; "*The Globally Effective Enterprise*"; McKinsey Quarterly, April 2015

In Class Case Analysis (read in advance for in-class activity):
Rahul Chandra Sheel and Neharika Vohra; "*Ingersoll Rand: Creating Effective Engineering and Technology Centers*" (cases A and B)

Assignments Due:
Group Presentations - Teams will have until noon, Thursday, February 8th to choose two teams and a correlating sector, and submit for approval.

Individual Research Paper - Topic choice, *preliminary* thesis statement (the thesis is expected to evolve with your research effort) and abstract (250 words max) are due by noon, Friday, February 16th

Session 3:
DATE: Saturday, February 24, 2018

Topic: Global Innovation: Platforms and Ecosystems
Session Objectives: Discuss the Platform Effect, and how Network Effects and Ecosystems come into play; discuss exponential technologies such as IoT, and how these are enabling the development and success related to platforms.

Required Readings (complete these readings prior to class):
Marshall W. Van Alstyne, Geoffrey G. Parker, and Sangeet Paul Choudary; "*Pipelines, Platforms, and the New Rules of Strategy*"; Harvard Business Review, April 2016

Marshall W. Van Alstyne, Geoffrey G. Parker and Sangeet Paul Choudary; "*Six Reasons Platforms Fail*"; Harvard Business Review, March 31, 2016

Feng Zhu and Nathan Furr; "*Products to Platforms: Making the Leap";* Harvard Business Review, April 2016

Eric Lamarre and Brett May; "*Making Sense of Internet of Things Platforms*"; McKinsey & Company, May 2017

In Class Case Analysis (read in advance for in-class activity):
Jeremy B. Dann, Katherine Bennett, Andrew Ogden, and Laju Obasaju; "*Xiaomi: Designing an Ecosystem for the Internet of Things*"

Session 4:
DATE: Saturday, March 10, 2018

Topic: Global Innovation: Sustaining and Disruptive Innovation Efforts

Session Objectives: Examine what Christensen's theory of Disruptive Innovation represents, and how it compares and differentiates from the broader representation of "disruption", and discuss the automotive industry – how technology is transforming and disrupting every aspect of product development, manufacturing, and customer expectation.

Required Readings (complete these readings prior to class):
Joshua Gans; "*The Disruption Dilemma*"; Rotman Management, Fall 2016

Clayton M. Christensen, Michael E. Raynor, and Rory McDonald; "*What Is Disruptive Innovation*?", HBR, December 2015

Juan Pablo Vazquez Sampere, "*Why Platform Disruption Is So Much Bigger than Product Disruption*"; HBR (web article), April 8, 2016

Hans-Werner Kaas et al; "*Automotive revolution – perspective towards 2030*"; McKinsey and Company, January 2016

In Class Case Analysis (read in advance for in-class activity):
Amadeus Orleans and Robert E. Siegel; "*Daimler: Reinventing Mobility*"

Session 5:
DATE: Saturday, March 24, 2018

Topic: Global Innovation: Collaborative Innovation
Session Objectives: Explore Chesbrough's theory of Open Innovation, and how this has fueled collaboration on a multitude of levels and across many variations; discuss a variety of open innovation examples, how protection of intellectual property may conflict with open innovation techniques, and use both the consumer products and pharmaceutical sectors as examples in terms of application.

Required Readings (complete these readings prior to class):
Henry Chesbrough; "*The Future of Open Innovation*"; Research-Technology Management, January—February 2017

Henry Chesbrough and Sabine Brunswicker; "*Managing Open Innovation in Large Firms*"; Fraunhofer Verlag/Executive Survey on Open Innovation, 2013

Chandra Gnanasambandam and Michael Uhl; "*Innovation Is as Much About Finding Partners as Building Products*"; Harvard Business Review, July 20, 2017

"*Pharma 2020: Virtual R&D*"; Price Waterhouse Coopers, 2008

In Class Case Analysis:
Frank T. Rothaermel; "*Merck & Co., Inc*."

Assignments Due:

Updated topic, thesis statement, abstract – plus an Outline, and Research Reference List (APA style): by noon, Friday, March 23rd

Session 6:
DATE: Saturday, April 7, 2018

Topic: Global Innovation: Innovation in Emerging Markets and Geographic Clusters
Session Objectives: Understand the similarities and differences behind the Bottom of the Pyramid, Reverse Innovation and Frugal Innovation. Discuss economic clusters, the financial services and fintech sectors, and the developing technologies associated with blockchain.

Required Readings (complete these readings prior to class):
Amos Winter and Vijay Govindarajan; "*Engineering Reverse Innovations*"; Harvard Business Review, July–August 2015

Vijay Govindarajan and Jim Euchner; "*Reverse Innovation*"; Research-Technology Management, November-December 2012

Jerome S. Engel; "*Global Clusters of Innovation- Lessons from Silicon Valley*"; California Management Review, Winter 2015

"*The New Dynamics of Financial Globalization*"; McKinsey Global Institute, August 2017

In Class Case Analysis (read in advance for in-class activity):
Ali Farhoomand and Paul Lowry; "*Facebook: Facing Off Against Tencent*"

Assignments Due:
Research Paper Draft (not required, but highly recommended – must represent a complete draft with all required sections to be considered): by noon, Friday, April 13th

Session 7:
DATE: Saturday, April 21, 2018

Topic: Global Innovation: Sustainability and Innovation

Required Readings (complete these readings prior to class):
Tensie Whelan and Carly Fink, "*The Comprehensive Business Case for Sustainability",* HBR, October 21, 2016

Eric Lowitt; "*How to Survive Climate Change and Still Run a Thriving Business*"; Harvard Business Review, April 2014

G. Unruh, D. Kiron, N. Kruschwitz, M. Reeves, H. Rubel and A. Meyer zum Felde, "*Investing for a Sustainable Future"*, Rotman Management, Winter 2017

David Kiron, Nina Kruschwitz, Knut Haanaes, Martin Reeves, Sonja-Katrin Fuisz-Kehrbach and George Kell, "*Joining Forces: Collaborative Leadership for Sustainability"*, Rotman Management, Fall 2015

"*Beyond the Supercycle - How Technology is Reshaping Supply and Demand for Natural Resources*"; McKinsey Global Institute, February 2017 (read at least Executive Summary, pgs. 1-15)

In Class Case Analysis (read in advance for in-class activity):
Dara O'Rourke and Robert Strand; "*Patagonia: Driving Sustainable Innovation by Embracing Tensions*"

Assignments Due:
The research paper will be due at midnight on Friday, April 27th, and no submission after this time/date will be accepted.

Session 8:
DATE: Saturday, May 5, 2018

Topic: Global Innovation: Final Exam and Group Presentations

Academic Integrity:

All students are responsible for understanding and complying with the NYU Statement on Academic Integrity.

Academic Integrity for Students at NYU

This policy sets forth core principles and standards with respect to academic integrity for students at New York University. Each school at New York University may establish its own detailed supplemental guidelines for academic integrity, consistent with its own culture, and consistent with the University-wide general guidelines described in this document.

At NYU, a commitment to excellence, fairness, honesty, and respect within and outside the classroom is essential to maintaining the integrity of our community. By accepting membership in this community, students take responsibility for demonstrating these values in their own conduct and for recognizing and supporting these values in others. In turn, these values will create a campus climate that encourages the free exchange of ideas, promotes scholarly excellence through active and creative thought, and allows community members to achieve and be recognized for achieving their highest potential.

In pursuing these goals, NYU expects and requires its students to adhere to the highest standards of scholarship, research and academic conduct. Essential to the process of teaching and learning is the periodic assessment of students' academic progress through measures such as papers, examinations, presentations, and other projects. Academic dishonesty compromises the validity of these assessments as well as the relationship of trust within the community. Students who engage in such

behavior will be subject to review and the possible imposition of penalties in accordance with the standards, practices, and procedures of NYU and its colleges and schools. Violations may result in failure on a particular assignment, failure in a course, suspension or expulsion from the University, or other penalties.

Faculty are expected to guide students in understanding other people's ideas, in developing and clarifying their own thinking, and in using and conscientiously acknowledging resources - an increasingly complex endeavor given the current environment of widely available and continually emerging electronic resources. In addition, students come to NYU from diverse educational contexts and may have understandings regarding academic expectations that differ from those at NYU. NYU values and respects all academic traditions; however, while at NYU, students are expected to adhere to the norms and standards of academic integrity espoused by the NYU community and will be assessed in accordance with these standards. Students should ask their professors for guidance regarding these standards as well as style guide preferences for citation of sources for assignments in their courses.

Following are examples of behaviors that compromise the academic and intellectual community of NYU. The list is not exhaustive. Students should consult the websites and guidelines of their individual schools for an extended list of examples and for further clarification.

1. Plagiarism: presenting others' work without adequate acknowledgement of its source, as though it were one's own. Plagiarism is a form of fraud. We all stand on the shoulders of others, and we must give credit to the creators of the works that we incorporate into products that we call our own. Some examples of plagiarism:

- a sequence of words incorporated without quotation marks
- an unacknowledged passage paraphrased from another's work
- the use of ideas, sound recordings, computer data or images created by others as though it were one's own

2. Cheating: deceiving a faculty member or other individual who assess student performance into believing that one's mastery of a subject or discipline is greater than it is by a range of dishonest methods, including but not limited to:

- bringing or accessing unauthorized materials during an examination (e.g., notes, books, or other information accessed via cell phones, computers, other technology or any other means)
- providing assistance to acts of academic misconduct/dishonesty (e.g., sharing copies of exams via cell phones, computers, other technology or any other means, allowing others to copy answers on an exam)
- submitting the same or substantially similar work in multiple courses, either in the same semester or in a different semester, without the express approval of all instructors
- submitting work (papers, homework assignments, computer programs, experimental results, artwork, etc.) that was created by another, substantially or in whole, as one's own
- submitting answers on an exam that were obtained from the work of another person or providing answers or assistance to others during an exam when not explicitly permitted by the instructor
- submitting evaluations of group members' work for an assigned group project which misrepresent the work that was performed by another group member
- altering or forging academic documents, including but not limited to admissions materials, academic records, grade reports, add/drop forms, course registration forms, etc.

3. Any behavior that violates the academic policies set forth by the student's NYU School, department, or division.

Moses Center Statement of Disability
If you are student with a disability who is requesting accommodations, please contact New York University's Moses Center for Students with Disabilities at 212-998-4980 or mosescsd@nyu.edu. You must be registered with CSD to receive accommodations. Information about the Moses Center can be found at www.nyu.edu/csd. The Moses Center is located at 726 Broadway on the 2nd floor.