Syllabus of the course
"Six Sigma, Innovation and Entrepreneurship"
Moscow, 2018

Lecturer – Associate Professor, Dr. Sergey Zykov (National Research University Higher School of Economics and National Nuclear Research University MEPhI)

Lectures 1 - 2 (4 hours). **Why Six Sigma, when and where appropriate, and how it assists entrepreneurship in the innovation age?**

Key concepts and ideas of innovative entrepreneurship. Course objectives and outline. Six Sigma and other methods of process and quality improvement. Personal and team software process (PSP/TSP). Maturity models (CMM/CMMI). Application examples in innovative entrepreneurship. Large-scale enterprises vs. small-scale startups. Innovative businesses vs. old-fashioned ventures.

Lecture 3 (2 hours). **Six Sigma and other approaches to quality and risk management**
Six Sigma and Define, Measure, Analyse, Improve, and Control (DMAIC) framework. DMAIC application to risk management. Quality metrics in risk management.

Lecture 4-5. (4 hours) **Case studies for process and its quality improvement.**
The history of software crisis and software engineering. Process improvement in software engineering. Personal software process. Team software process. Software process improvement. Process improvement in knowledge transfer.

Lectures 6-7. (4 hours) Patterns and anti-patterns for quality/process management
Crisis management. System and software engineering. Enterprise architectures for quality management. IT infrastructure alignment with business requirements. Formal process frameworks: MSF and RUP. Agile process frameworks: Scrum, XP, agile. Lifecycle-oriented quality management.

Lecture 8. (2 hours). Prospects of advanced quality/process management **in the innovation age.**
Service oriented management. Cloud services. Emerging technologies (big data, IoT etc.). Entrepreneurship in the digital age.

Prerequisites: Math at high school level

The final grade will be based on in-class activities including team brainstorming, mind-mapping and a set of case studies based on the course content.

References

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3. Bernstein M.E., Braude E.J. *Software Engineering: Modern Approaches*. Wiley; 2ed., 2010
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5. Bubevski, V., 2016. Risk Management: A Novel Six Sigma Approach. In: Bowers, D., ed. Risk Management: Past, Present and Future Directions, Nova Science Publishers, Inc., New York, NY, USA, 2016, pp. 1–58.
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17. Tarantino, A., Cernauskas, D., 2009. Risk Management in Finance*: Six Sigma and Other Next-Generation Techniques*, Wiley, May 4, 2009
18. Zykov, S. *Crisis Management for Software Development and Knowledge Transfer*. Springer, 2016.