

Bauman Moscow State Technical University  
(Bauman University)



**EDUCATIONAL STANDARDS  
AT THE NATIONAL  
UNIVERSITY  
OF TECHNOLOGY**

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The subject of my presentation is essential for two reasons.

- ✪ **First**, universities of Russia fully joined the Bologna Process and had to reform the higher professional education system as universities of Europe did it before.

The reform means, first of all, design of curricula in line with the European ones, then an appropriate transformation of the university structures, legislation, and, at last, teaching experience to implement them.



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- ✦ **Second**, joining the Bologna Process in Russia is combined with modernization and innovation processes of domestic manufacture.

One of the ways to solve the problem was to nominate leading technical universities of Russia for a status of “National Engineering Research University”.

- ✦ Presently, there are about 30 special elite universities of this type aimed at both to providing efficient teaching students and integrating education and research activities within the university.
- ✦ Colleagues from Tomsk, St Petersburg and I are representatives of these universities. I hope that my presentation together with their ones enable you to understand the problems we have to solve and methods we use, and outcomes we have reached.



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## **Compliance of Russian standards with the main Bologna principles of study programmes:**

- ✦ **Russian universities start cycle-based education;**
- ✦ **Outcome-based Approach which focuses on the learning outcomes to show competences;**
- ✦ **Module-based structure;**
- ✦ **Using ECTS.**



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The above mentioned **National Research Universities** are entitled to **develop and use their own standards of education while designing the curricula.**

And, certainly, the requirements for their using conditions and learning outcomes must not be lower than those of the Federal State Educational Standards.

- ✦ My contacts with European colleagues has shown that own study programmes are often offered in Europe.
- ✦ So the common principles we use in Bauman University in designing the individual own education standards and curricula are in line with the world practice.



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Principles of designing the individual own education standards and curricula are in line with the world practice:

- ✦ An objective assessment of the University graduates capabilities and their employability at the labour market has been accomplished. To do this independent human resource and rating agencies, professional societies have been involved.
- ✦ Further, we had to review the structure and types of cycle-based engineering programmes to train bachelors, masters and specialists within the framework of Bologna Process (BS – MS – Specialist - Engineering degree).
- ✦ The next step is a transition to the Outcome-based Approach to design, implementation, and quality assessment of study programmes.



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✪ We compared these learning outcomes with those recognized by the European accreditation system of engineering study programmes (EUR-ACE) and realized that they are very close to Six Programme Outcomes approved by the EUR-ACE:

- **Knowledge and Understanding**
- **Engineering Analysis**
- **Engineering Design**
- **Investigations**
- **Engineering Practice**
- **Transferable Skills**

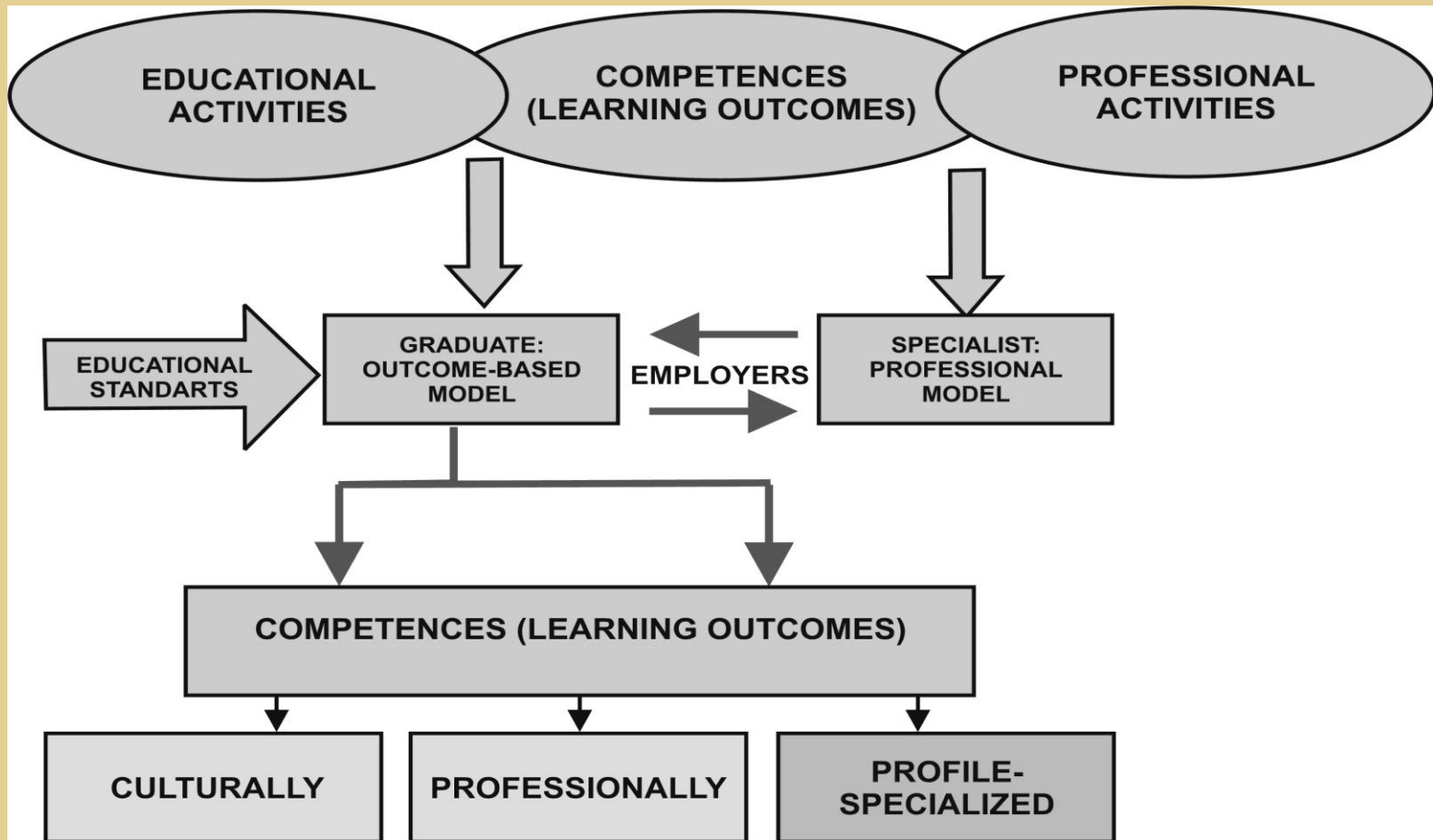
We also discovered that there is a possibility to have some extra profile-specialized learning outcomes which summarize our leading academic staff's experience in developing author's courses.





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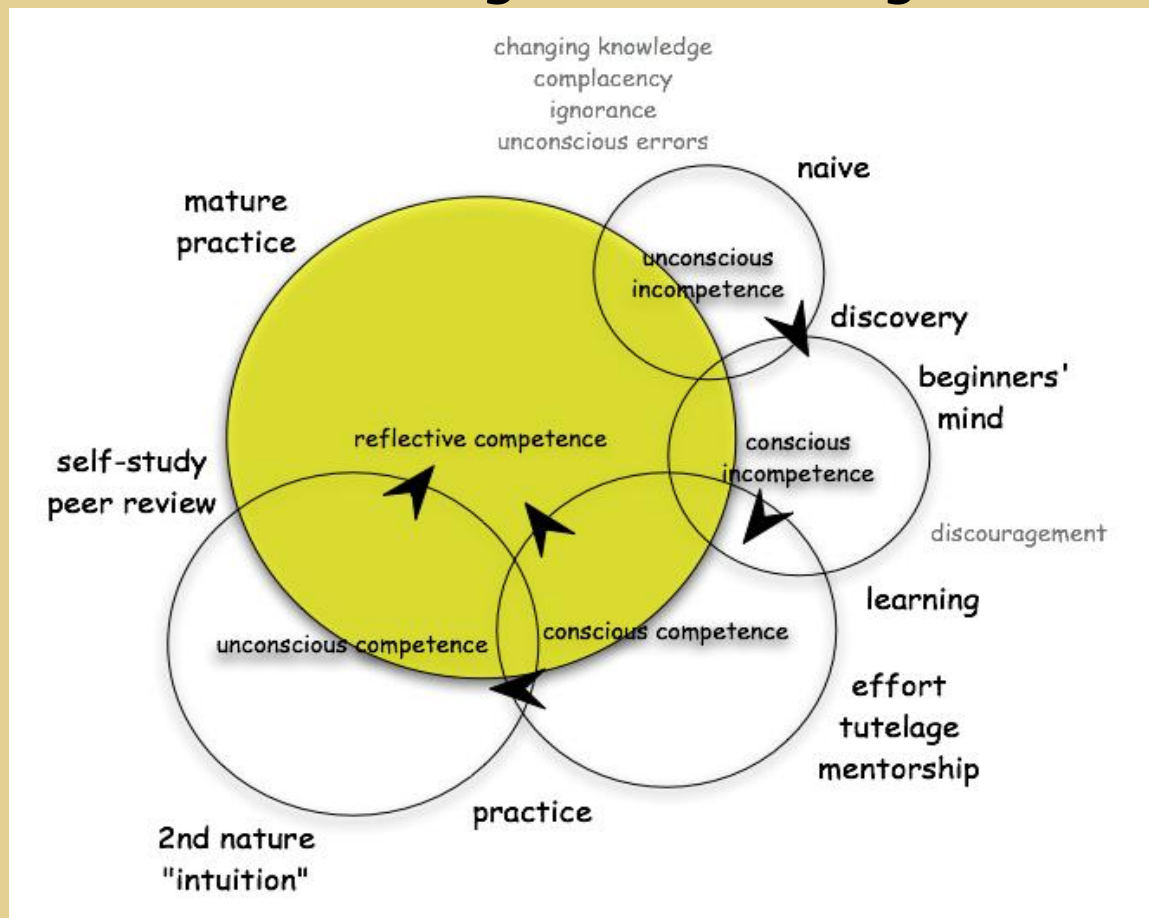
- ✦ These learning outcomes show not only knowledge, abilities, and skills which students gained. In many cases, new **methodological approaches to new R & D in engineering.**
- ✦ **But the most important result** we gained was formulating specialized learning outcomes which facilitate creativity approach to the **problem-solving, develop mental algorithms of actions, both in professional environment and beyond it.**
- ✦ As a consequence, ways to the transition to the **Learning VS Teaching and Student – centered Education** have been outlined.



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## Stages of Learning





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- ✦ As a conclusion, I `d like to note that it is not easy to provide a transition to the new principles in arrangement of education process in the University with a history of 180 years.
- ✦ Using innovations we tried to keep all the best traditions and teaching methods of our outstanding predecessors.
- ✦ We hope that in cooperation with our European colleagues we shall be able to provide and meet international requirements for quality assurance of the cycle-based engineering study programmes .

Thank you for attention.