

## Individual structuring of curricula sets

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### BACKGROUND

The multi-level education system of professional training in science-based chemical engineering has been tested and developed since 1997 up to the present in Lomonosov Moscow University of Fine Chemical Technology (MUTHT). Educational level is a segment of curriculum between two competitive selection exams. The first level is at present the level of the first year, which contains the same set of subjects for the eight groups of technical specialties for the Bachelor's Degree. When entering the first year students submit applications for particular group of specialties. At the end of the first year students are distributed into specialty groups depending on the preferences of a student, his or her academic records and the quotas, determined by the Scientific Council for a given academic year. In the situation of lowering interest of young people towards engineering and scientific work in the field of science-based technologies students entering the University may suffer the lack of motivation for the study of science and engineering and have vague idea of the perspectives of their future profession.

### PURPOSE

Motivated and adequate for particular person's capabilities choice of students for differently targeted educational programs is the main goal of the University at the first educational level. The course "Individual structuring of curricula sets" has been tested during the second semester of the first year for three years by now. Students of the first year after studying for a semester and passing their first exams are ready to form their own impression of university education and of their personal aims and capabilities. The course is targeted at increasing motivation for technical education, development of communication skills, capability to work as a team, encouraging students to think over the choice of specialty group for the Bachelor's Degree, choice of preferable curricula set for future University years and planning their professional career.

### DESIGN/METHOD

Students are suggested to present in the form of a course paper their future individually targeted education structure and the plan of their future professional career. The work goes on in groups of 3-4 people and includes the following stages:

- preliminary testing to determine initial motivation in the choice of the university and the level of satisfaction from the educational process;
- discussion of the task, collecting material, its analysis and systematization;
- determining responsibilities of the team members: a leader, an educator, a designer, a critic, etc.;
- well thought over individual education structure for the next 4-9 years,
- choosing components of education structure (Bachelor's Degree, Master's Degree, Postgraduate courses), department, type of education (applied or academic), type of future activity (science, practical work: production engineer, designer, engineer, etc.), need for the second education.

### **INTERIM FINDINGS**

The initial motivation of students and their education programs have been studied. The results show, that 43% of prospective students start to choose a university a few months before graduation from secondary school and only 21% - 2-3 years before graduation. The main criteria for the choice of the university are prestige and status of the university (up to 65%) and the possibility to find a good job after graduation from it (up to 85%). Still the students not always understand the perspectives of their future profession, are not enough motivated for scientific and engineering work, are often unable of critical self-evaluation which leads to underestimation of future difficulties in mastering the chosen education program. 32% of students are satisfied by the results of their first exams, 59% are partially satisfied and 9% are unsatisfied. The main factors that influence the results are, according to the test, lack of motivation (74%) and the level of personal capabilities (56%). As a result of competitive selection 40% of students are distributed to specialty groups different from their preliminary request.

### **FURTHER RESEARCH**

The next stage of our study – to investigate gender aspect in motivation for chemical engineering education.

### **CONCLUSIONS & CHALLENGES**

While getting acquainted with multi-level curriculum structure of the University students get to realize factors which determine the group of specialties to which the student will belong: students own requests, his or her educational rating, quotas, regulating the number of state-financed and self-financed students for a given academic year. This increases students' motivation for quality higher chemical engineering education.

### **KEYWORDS**

Individual curriculum, professional career, specialization