First-Year Undergraduate Student Academic Profile: 2009 Enrollment

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Introduction

"We must view young people not as empty bottles to be filled, but as candles to be lit." (Robert H. Shaffer).

Students enrolled in the Faculty of Telecommunications and Electronics (TEF) of the Kaunas University of Technology (KTU) in 2009 are different from those students who were enrolled in the Faculty in previous years. Firstly enrollment dramatically decreased from two and a half hundred in earlier years to one hundred students. Secondly, students of 2009 enrollment were more zealous attending lectures, tutorials, seminars and laboratories than before, and thirdly, as a consequence, the retention rate after the first semester of study markedly improved from 70-75% to 96%. There are good and bad news for the University. The good news is for instructors, because students are more motivated to learn, and the bad news is for administration – decreased numbers of students, and consequently fewer funds from the government to the university.

In this country financing of university or college depends upon the number of students, but previously students didn't pay tuition fees at all or paid only a small proportion of the fee, and the university could admit almost any graduate of the secondary school if appropriate conditions were satisfied. But last year the situation was changed, and the so called "student basket" was introduced. Since only a limited number of these "baskets" was available, they were distributed among students on a competitive basis, in accordance with students' academic performance in a secondary school. Therefore the financing of the university depends upon the number of enrolled students with a "student basket". Students enrolled to the university without a "basket" have to pay full tuition fees. Since engineering is not an attractive area

of study [1] and only a few students can afford to pay full tuition, decreased enrolment results for the TEF.

The effectiveness of education is the main concern for the educator. Therefore learning style profiles, orientations to study and intellectual development of students should be assessed and analyzed in order to assure the best environment for education at the TEF [2].

Method

It is obvious that instructors are regularly communicating with students in the classrooms, laboratories, during tutorials and exams. Many of them seem to know their students well. At least they think so. But there is no evidence that students are quite open and sincere in such direct communication with instructors. This could be explained by differences in age and status of instructor and a student. That is why the most convenient clarification of a student's opinion should be anonymous. For that purpose we had prepared our own questionnaire. An interview survey was carried out at the TEF in March, 2010. Questionnaires were distributed and filled in in the classroom, aiming to obtain students' very personal responses. In conclusion, 59 students out of 98 took part in a survey, every one of them with adequate attendance at lectures. For the majority of students 20 minutes was enough to fill in the questionnaires.

Questionnaire

The questionnaire consists of three groups of questions. The first group contains student's personal information, i.e. secondary school name and graduation year, competitive score for admission to the university, the study programme that was applied for and the study

programme in which student enrolled, as well as payment of tuition fee. The second group reveals student's academic performance expressed in grades for all courses delivered in the first (autumn) semester of study and ambitions of the student about his or her future at the university. The third group of questions deals with student's estimation of attractiveness, usefulness and difficulty of courses, student workload to achieve desired learning outcomes, and willingness of instructors to assist a student in his or her learning activity. Overall opinion of a student about study at the TEF was welcomed as well.

Results and Discussion

Basically our results and discussion are based on data from the survey. Thus we took into consideration not all the students enrolled in the TEF, but only those, who took part in the survey. It's about 60% of 2009 enrollment.

The Faculty of Telecommunications and Electronics offers three four-year bachelor's degree study programmes: Electronics Engineering, Intelligent Electronic Systems, and Telecommunications. It appeared that all enrolled students were graduates of secondary school or gymnasium in 2009. Distribution of applicants among study programmes is presented in Table 1.

Table 1. 2009 Enrollment in the study programmes at the TEF

	Electronics Engineering	Intelligent Electronic Systems	Telecommu-nications	Total
Enrollment / #	**30** / 22	**8** / 6	**21** / 13	**59** / 41
Number of applicants	30	7	19	56
Average competitive score	**14.47**	**14.49**	**15.86**	**14.94**
Highest competitive score	19.20	19.62	20.40	20.40
Lowest competitive score	10.48	11.00	10.60	10.48

Note: # - number of nonresidents of Kaunas, included in enrollment

Student is enrolled in the study programme considering student's competitive score, which is taken as a measure of student's ability to study at the TEF. It is obvious that the best students are enrolled in the Telecommunications study programme. Within the Kaunas University of Technology the TEF enrollment is on a rather good level among Technology area study programmes, but on a somewhat lower level than enrollments in the study programmes of Physical, Social

Sciences areas, as well as in Humanities. Admission scores of enrollment to the Kaunas University of Technology according to areas of study are presented in Table 2.

Table 2. Admission scores for 2009 enrollment at KTU by study area

Aria of study	The highest score	The lowest score
Technology	**21.24**	**9.80**
Physical Sciences	24.04	11.22
Social Sciences	25.60	16.34
Humanities	23.10	14.88

When enrolling in a university most students only want to complete the bachelor's degree. But some students have plans for postgraduate study. According to the survey intentions of our students after one semester of study at the TEF are presented in Table 3.

Table 3. Students' aim of study at the TEF

Aim of study	Electronics Engineering	Intelligent Electronic Systems	Telecommu-nications	All study programmes
Bachelor's degree	15 / 50 %	2 / 25 %	3 / 14.3 %	20 / 33.9 %
and Master's degree	15 / 50 %	5 / 62.5 %	14 / 66.7 %	34 / 57.6 %
and Doctor's degree	0	1 / 12.5 %	4 / 19 %	5 / 8.5 %

It is obvious that students with higher abilities, who are enrolled in study programmes of Telecommunications and Intelligent Electronic Systems, are more likely to aim for higher university degrees. For a student in Electronics Engineering the practical work is more attractive than theory, and thus only half the students are contemplating a master's degree, without any desire to pursue a Doctor's degree.

The specific feature of these three study programmes is that they are the same for the first and second year of study. Students are *learning* the same courses, attending the same lectures, doing the same laboratory experiments and projects. This is an advantage for the students because they can change the study programme during the first and second year of study without any academic disruption. Students' average academic performance for all courses, taken by students during the first (autumn) semester of study, is presented in Table 4.

Table 4. Students' average grades for the first semester

	Electronics Engineering	Intelligent Electronic Systems	Telecommuni-cations	Average grade
Mathematics	6.64 / *6.35*	6.25 / *6.30*	7.35 / *6.70*	**6.84** / *6.45*
Philosophy	6.50 / *6.65*	6.75 / *6.80*	7.14 / *6.65*	**6.76** / *6.70*
Basics of Communication	8.27 / *8.30*	8.50 / *8.60*	8.95 / *8.60*	**8.54** / *8.50*

	Electronics Engineering	Intelligent Electronic Systems	Telecommuni-cations	Average grade
Basics of Information Technology	7.70 / 7.70	7.75 / 7.40	8.35 / 7.85	**7.93 / 7.65**
Physical culture	9.13 / 9.25	10.00 / 9.60	9.45 / 9.00	**9.36 / 9.28**
Laboratory Training	9.37 / 9.35	9.25 / 8.90	9.48 / 9.10	**9.39 / 9.12**
Materials Science and Engineering	6.93 / 6.75	7.75 / 7.40	7.35 / 6.85	**7.19 / 7.00**
Student's average grade	**7.79 / 7.76**	**8.04 / 7.86**	**8.30 / 7.82**	**8.00 / 7.81**

Note: average grades in italic are evaluated including students, who did not take part in a survey.

The grading scale used in KTU is based on a number scale from 1 to 10. Five and higher being a passing grade and four or lower a failing grade. Unfortunately, average grades for such important subjects, as mathematics, information technology, materials science and engineering appears rather modest. Surprisingly enough the situation is very much the same for philosophy. It should be noted that academic performance of all students, i.e. also including students who did not take part in a survey, in general is lower. It is evident that students with good class attendance show better academic performance.

Students' opinions about attractiveness of teaching, usefulness, and complexity of courses, student workload, and cooperativeness of the instructor are presented in Table 5. The highest evaluation of an aspect can be "1", and the lowest "5".

Table 5. Students' opinions about some aspects of courses from 1 to 5 (the highest evaluation – 1, and the lowest – 5)

	Mathematics	Philosophy	Basics of Communication	Basics of Information Technology	Physical culture	Laboratory Training	Materials Science and Engineering
Attractiveness of teaching	3.30	1.90	3.36	2.88	3.28	4.49	3.90
Usefulness of the course	4.47	1.67	3.08	3.78	3.88	4.54	4.22
Complexity of the course	4.30	3.07	2.26	4.09	1.88	2.92	4.02
Student workload for the course	4.16	2.36	2.44	4.00	2.19	2.86	4.10
Cooperativeness of instructor	4.47	3.24	4.20	2.67	3.64	4.38	3.86

No wonder that mathematics is not an attractive matter in the classroom, because grades of students' are rather modest, but opinion of students' about the low usefulness of the subject is incomprehensible. It is surprising that philosophy is considered as a highly useful course with attractive teaching, but comparatively low grades! In the curriculum *Materials Science and Engineering* is considered as an introductory speciality course, but students' evaluation is an indicator for an instructor that the course is too simplified in order to satisfy students' expectations. The situation is very much the same for the *Laboratory Training*, which is very important in the education of a future engineer [3].

Table 6. Students' overall opinion about education at the TEF.

Positive	Neutral	Negative
29 / **49.16 %**	27 / **45.76 %**	3 / **5.08 %**

Students' overall opinion about education at the TEF is presented in Table 6. The result is not dramatic, because only five percents of students are dissatisfied and 46% are neutral, but needs and wishes of students' should be taken into consideration seriously.

Conclusions

1. Although retention rate of 2009 enrollment is much higher than for enrollments of previous years for first year students and attendance of classes is improved, therefore academic performance of students are expected to be higher.
2. Students' opinions about low attractiveness of teaching, usefulness and complexity of *Mathematics, Materials Science and Engineering, Laboratory Training* is a challenge to instructors to introduce teaching and learning methods adequate to the capabilities of students today.
3. Effectiveness of education depends very much upon the cooperativeness of instructor in the classroom. Understanding of student's educational problems and ability to support and supervise a student is an attribute of a good teacher. According to students' opinion the cooperativeness of our instructors is not sufficient adequate yet.
4. Findings obtained from the survey are advantages in developing efficient and friendly learning environment for enrolment 2009 at TEF.

References

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Academic profile and performance, opinions about learning environment of the first year students' is assessed and analyzed in order to increase effectiveness of education at the TEF. Results and discussion are based on survey data, collected aTEFr the first semester of study. Bibl. 3, tabl. 6 (in English; abstracts in English, Russian and Lithuanian).

Р. Кривицкас, А. Валинявичюс, Д. Эйдукас, Д. Андрюкайтис, Б. Декерис. Академический профиль студентов первого курса: прием 2009 года // Электроника и электротехника. – Каунас: Технология, 2010. – № 6(102). – С. 95–98.

Представлен и анализирован академический профиль и успеваемость, а также мнения студентов первого курса о среде обучения на Факультете телекоммуникаций и электроники, с целью повышения эффективности обучения. Результаты получены на основе данных опроса студентов, проведенного после первого семестра обучения. Библ. 3, табл. 6 (на английском языке; рефераты на английском, русском и литовском яз.).

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Įvertintos ir apibūdintos pirmojo kurso studentų savybės bei akademinis pažangumas. Apibendrintos studentų nuomonės apie studijų aplinką padės didinti studijų Telekomunikacijų ir elektronikos fakultete efektyvumą. Išvados remiasi studentų apklausa, atlikta po pirmojo semestro studijų. Bibl. 3, lent. 6 (anglų kalba; santraukos anglų, rusų ir lietuvių k.).