# INCREASING OF QUALITY IN HIGHER EDUCATION

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**Abstract**

*The paper deals with increasing of educational quality in the subject "Mechanics of composite materials", which was realized within the Erasmus IP project, obtained by Civil Engineering Faculty, Technical University of Kosice. The main idea has been to manage the intensive course with topic of Mechanics of composite materials in order to increase the quality of educational process. Therefore, it was done the questionnaire for students, which was consequently evaluated to know the strong and week features of the subject.*

**Key words:** *educational quality, "Mechanics of composite materials", Erasmus IP project, Civil Engineering Faculty, Technical University of Kosice*

## 1. INTRODUCTION

Erasmus Intensive Programme (IP)'s objective is to achieve joint international access within the frame of the project theme, which was accomplished by a system of lectures. The lectures are built-up by agreement at a multilateral level. The topic of IP is multidisciplinary and joins subjects such as Theoretical Mechanics, Elasticity and Plasticity, Strength and Plasticity, Material Engineering, Progressive Numerical Methods and Experimental Verification of Structures in one hybrid unit of lectures, those will contribute to compatibility and quality of education.

The students´ groups of IP were made of students from the Faculty of Civil Engineering, Czech Technical University in Prague in Czech Republic, students from Faculty of Civil Engineering and Faculty of Mechanical Engineering, the Transylvania University of Brasov, Romania and students from the Faculty of Civil Engineering, Technical University of Košice, Slovak Republic.

The duration of the IP was 10 continuous full days of subject-related work of uninterrupted teaching sessions. The subject-related days do not include preparatory work, social programme outside the IP topic or travel days (arrival and departure are not considered as working days if no teaching activities take place). All duration of the IP was 14 days.

Students were educated by integrated system of lectures in the morning and tutorials in the afternoon. The tutorials were comprised of studying practical applications and solving particular problems introduced during the lectures. The tutorials were divided into computing and laboratory.

The education was done on every work day (4-hour lectures and 2-hour tutorials, 60 hours together). The participation on tutorials was compulsory and it was controlled by signing-in sheet. The final presentations of students were evaluated and students could obtain 5 credits as result of gaining the required knowledge.

## 2. MAIN OBJECTIVE(S) OF THE ERASMUS SUB-PROGRAMME

Main objectives of the IP were following [7], [8]:

- To improve the quality and to increase the volume of student and teaching staff mobility throughout Europe, so as to contribute to the achievement by 2012 of at least 3 million individual participants in student mobility under the Erasmus programme and its predecessor programmes.
- To improve the quality and to increase the volume of multilateral cooperation between higher education institutions in Europe

- To increase the degree of transparency and compatibility between higher education and advanced vocational education qualifications gained in Europe
- To facilitate the development of innovative practices in education and training at tertiary level, and their transfer, including from one participating country to others
- To support the development of innovative ICT-based content, services, pedagogies and practice for lifelong learning

## 3. PROJECT COORDINATORS

The main project coordinators are following:

- Project coordinator for Slovakia - Eva Kormaníková - Technical University of Košice, Civil Engineering Faculty.
- Contact person for the Czech Republic - Michal Šejnoha - The Czech Technical University in Prague, Civil Engineering Faculty
- Contact person for Romania - Ioan Száva - Transylvania University in Brasov, Faculty of mechanical Engineering.

## 4. LOCATION AND DURATION

The Intensive Programme was taken place on the Technical University of Košice (Fig. 1) in year 2011, on the Czech Technical University in Prague (Figs. 2-4) in year 2012 and on the Transylvania university of Brasov (Fig. 5) in year 2013.

The participating students were registered in one of the participating institutions - Technical University of Košice (Slovakia), Czech Technical University in Prague (the Czech Republic) or Transylvania University in Brasov (Romania).



Fig. 1 Lectures of the IP Erasmus course



Fig. 2 Excursion to the laboratory of the Czech Technical University in Prague



Fig. 3 Technical excursion to the laboratory of the Czech Academy of Sciences in Prague



Fig. 4 Excursion to the Josef Underground Laboratory





Fig. 5 Excursion to the scientific institute INAR in Brasov

## 5. DISSEMINATION AND EXPLOITATION OF RESULTS

The outputs of the project were the following:

- the book with title Selected Chapters of Mechanics of Composite Materials I, II, III [2, 4, 6]
- the CD (set of educational texts and didactic tools, e-learning) with title Mechanics of Composite Materials I, II, III, Lectures [1, 3, 5]
- website with the program of IP

## 6. FINAL REPORT FORM FOR STUDENTS EVALUATION

There was done the questionnaire for students by the SAAIC agency. The questionnaire consists of 18 questions with text written as title of Figs. 6-23. It was evaluated and consequently depicted in graphically form Figs. 6-23.

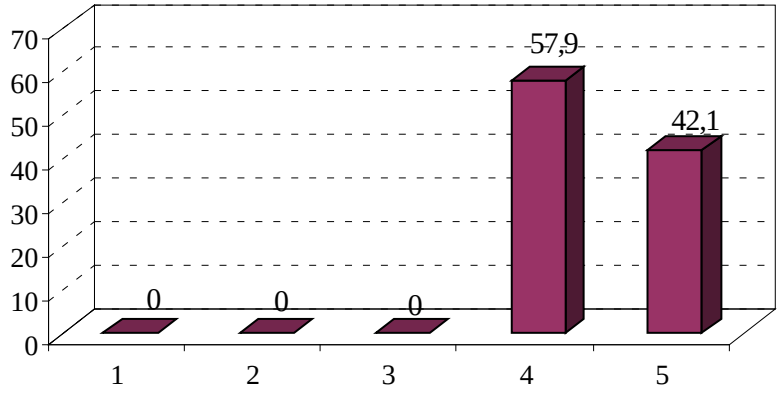



Fig. 6 How satisfied were you with the duration of the IP

☹ 1(0%) – 2(0%) – 3(0%) – 4(57,9%) – 5 (42,1%) ☺

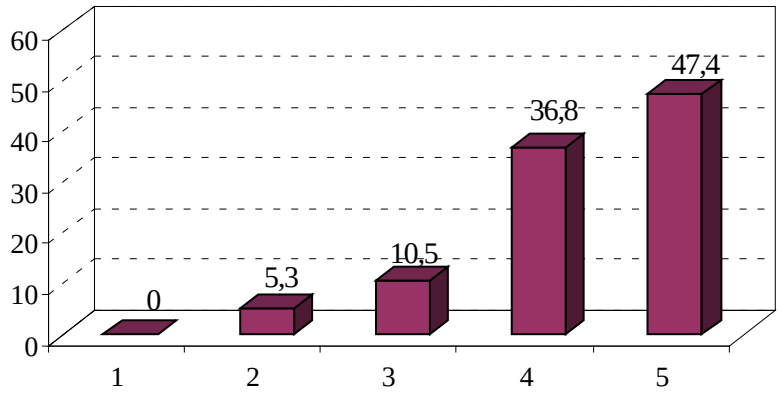



Fig. 7 How satisfied were you with the dates of the IP?

☹ 1(0%) – 2(5,3%) – 3(10,5%) – 4 (36,8%) – 5(47,4%) ☺

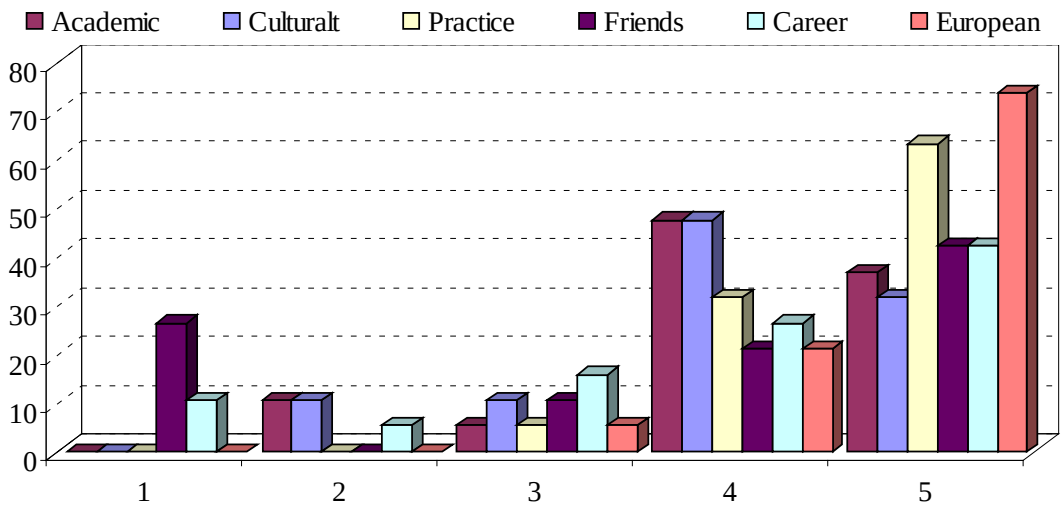



Fig. 8 Which were the factors which motivated you to participate?

Academic ☹ 1(0%) – 2(10,5%) – 3 (5,3%) – 4(47,4%) – 5(36,8%) ☺

Cultural ☹ 1(0%) – 2(10,5%) – 3 (10,5%) – 4(47,4%) – 5(31,6%) ☺

Practice of foreign language ☹ 1(0%) – 2(0%) – 3 (5,3%) – 4(31,6%) – 5(63,1%) ☺

Friends living abroad ☹ 1(26,3%) – 2(0%) – 3 (10,5%) – 4(21,1%) – 5(42,1%) ☺

Career plans ☹ 1(10,5%) – 2(5,3%) – 3 (15,8%) – 4(26,3%)– 5(42,1%) ☺

European experience ☹ 1(0%) – 2(0%) – 3 (5,3%) – 4(21,1%) – 5(73,6%) ☺

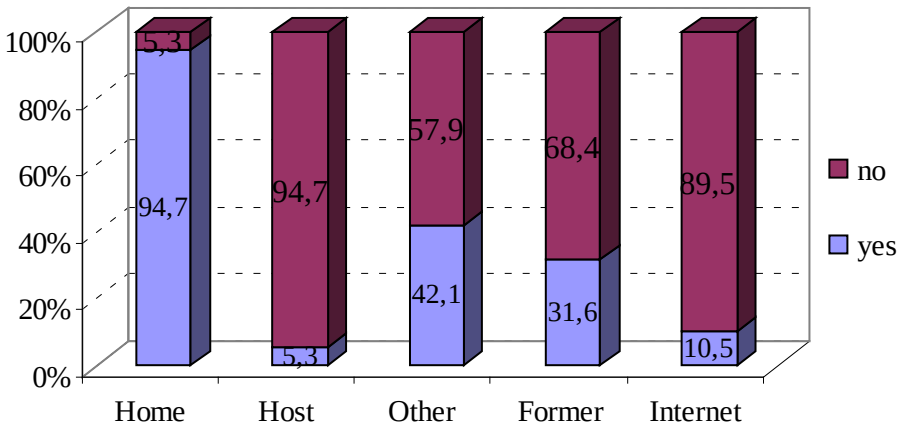



Fig. 9 Where did you hear about the IP?

| | |
|---|---|
| Home institution | Yes (94,7%) / No (5,3%) |
| Host institution | Yes (5,3%) / No (94,7%) |
| Other students | Yes (42,1%) / No (57,9%) |
| Former participants | Yes (31,6%) / No (68,4%) |
| Internet | Yes (10,5%) / No (89,5%) |

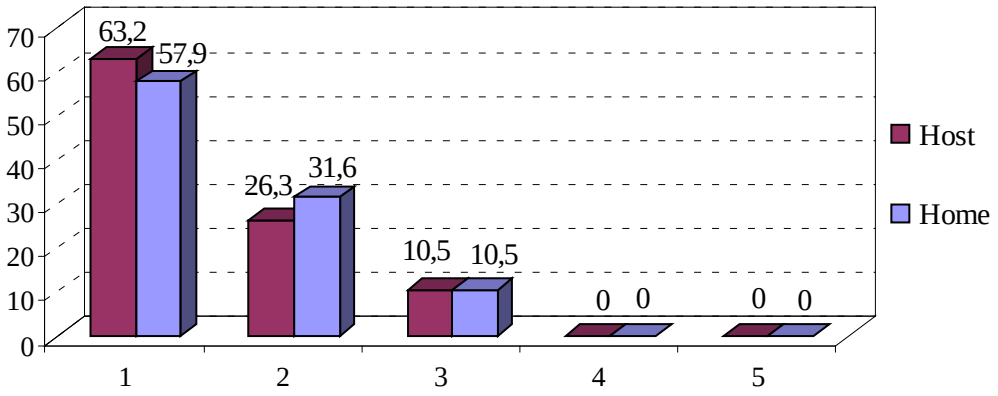



Fig. 10 Did you receive adequate support from your home institution and from the host institution before and during the IP?

Home institution ☹ 1(0%) – 2(0%) – 3 (10,5%) – 4(26,3%) – 5(63,2%) ☺

Host institution ☹ 1(0%) – 2(0%) – 3 (10,5%) – 4(31,6%) – 5(57,9%) ☺

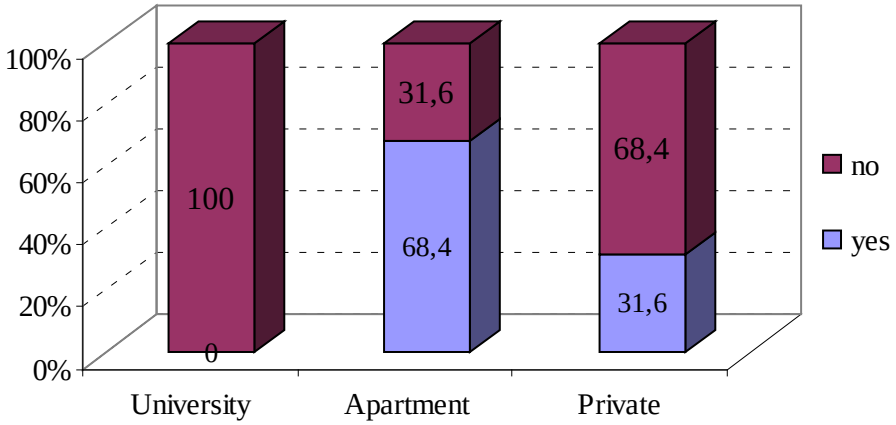



Fig. 11 Type of your accommodation in the host country

University accommodation Yes (0%) / No (100%)

Apartment or house together with other students Yes (68,4%) / No (31,6%)

Private housing Yes (31,6%) / No (68,4%)

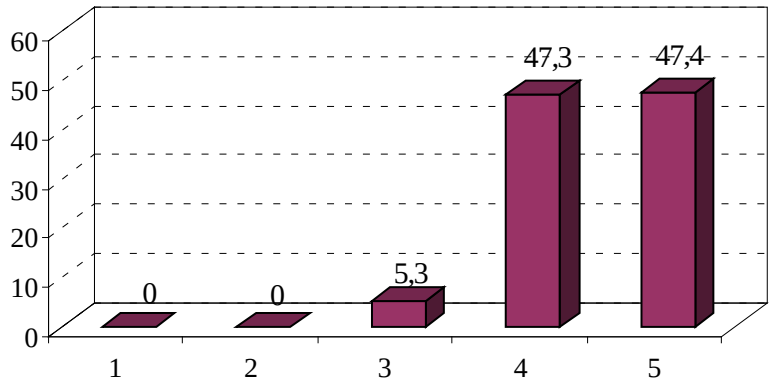



Fig. 12 Were you satisfied with your accommodation?
☹ 1(0%) – 2(0%) – 3 (5,3%) – 4(47,3%) – 5(47,4%) ☺

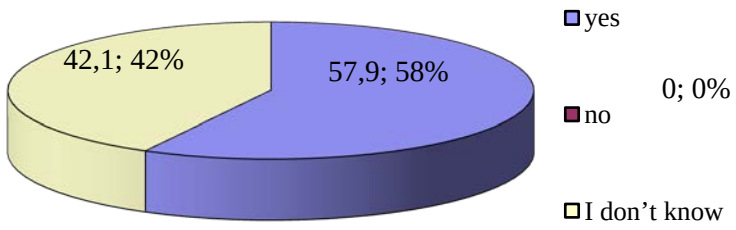



Fig. 13 Will you gain recognition for your IP by your home institution?
Yes (57,9%)/ No (0%) / I don't know yet (42,1%)

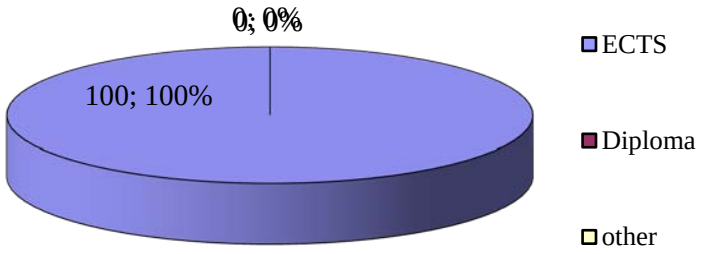



Fig. 14 If yes, how will it be recognised?
ECTS (100%) – Diploma supplement – other

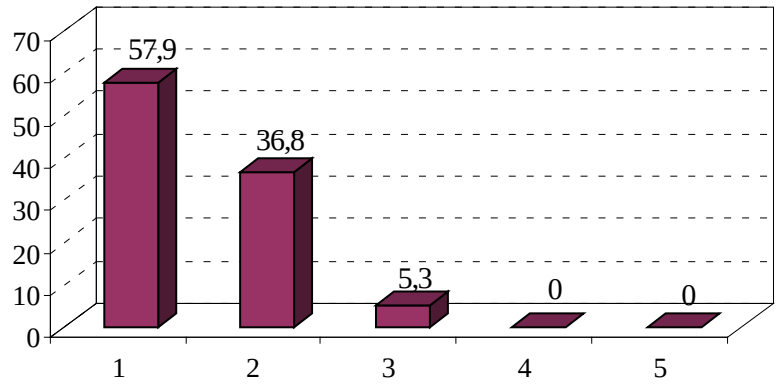



Fig. 15 Did you encounter any problems concerning recognition of your IP?

☺ 1(57,9%) – 2(36,8%) – 3 (5,3%) – 4(0%) – 5(0%) ☹

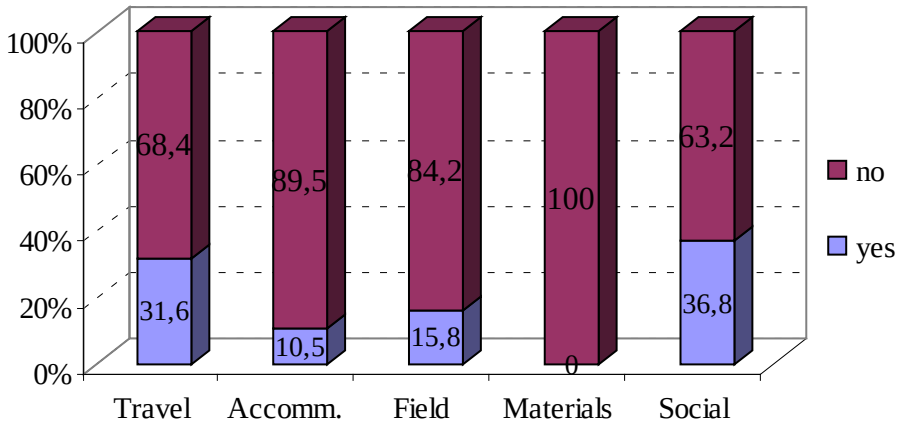



Fig. 16 What kind of costs did you need to contribute to?

Travel to host institution Yes (31,6%)/ No (68,4%)

Accommodation Yes (10,5%)/ No (89,5%)

Field visits Yes (15,8%)/ No (84,2%)

Materials used during the IP Yes (0%)/ No (100%)

Social programmes Yes (36,8%)/ No (63,2%)

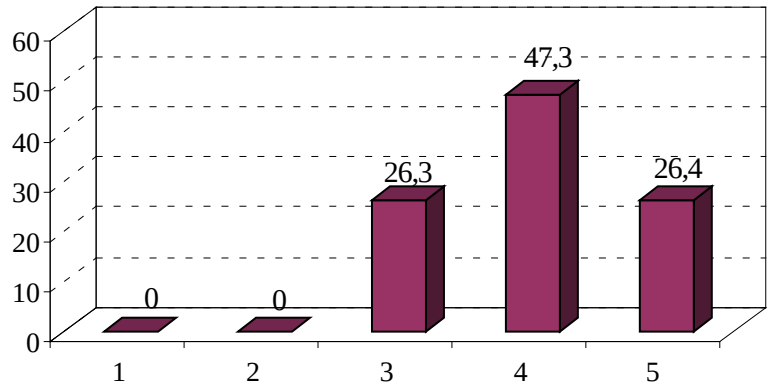



Fig. 17 Judgement of academic/learning outcomes of the IP

☹ 1(0%) – 2(0%) – 3 (26,3%) – 4(47,3%) – 5(26,4%) ☺

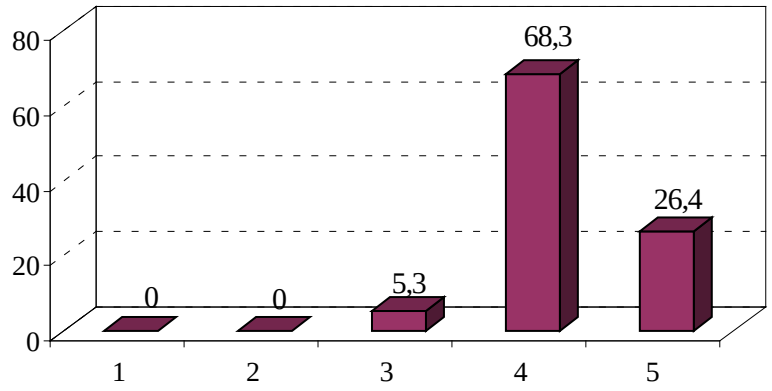



Fig. 18 Judgement of personal outcomes of the IP

☹ 1(0%) – 2(0%) – 3 (5,3%) – 4(68,3%) – 5(26,4%) ☺

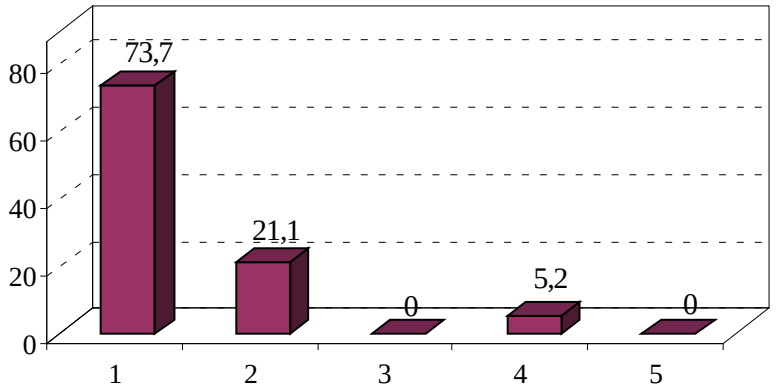



Fig. 19 Did you encounter any serious problems during the IP?

☺ 1(73,7%) – 2(21,1%) – 3 (0%) – 4(5,2%) – 5(0%) ☹

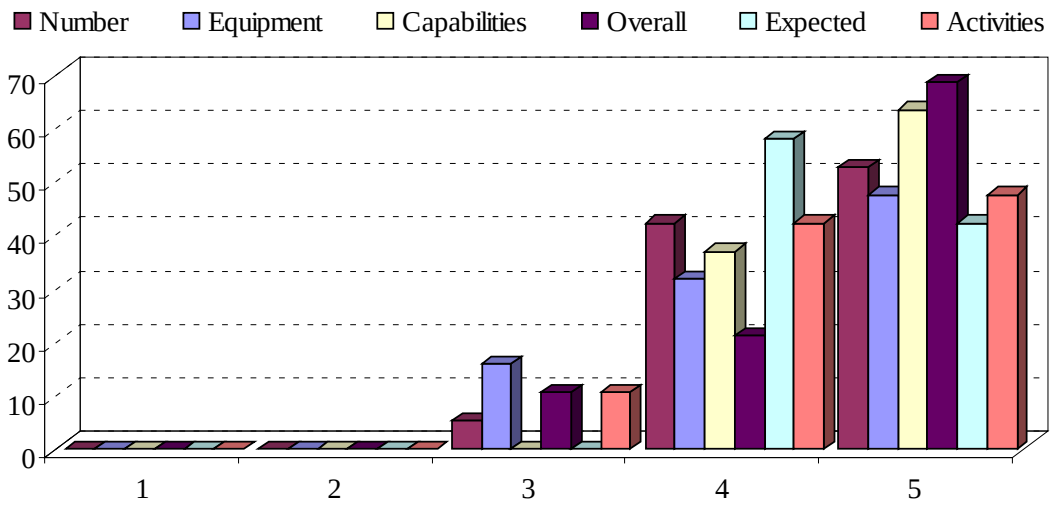



Fig. 20 How satisfied were you with the academic activities and the pedagogical aspects of the IP in terms of the following aspects?

The number of hours taught ☹ 1(0%) – 2(0%) – 3 (5,3%) – 4(42,1%) – 5(52,6%) ☺

The equipment used ☹ 1(0%) – 2(0%) – 3 (15,8%) – 4(31,6%) – 5(47,4%) ☺

The capabilities and expertise of the professors ☹1(0%) – 2(0%) – 3 (0%) – 4(36,8%) – 5(63,2%) ☺

The overall quality of teaching ☹ 1(0%) – 2(0%) – 3 (10,5%) – 4(21,1%) – 5(68,4%) ☺

The expected learning outcomes ☹ 1(0%) – 2(0%) – 3 (0%) – 4(57,9%) – 5(42,1%) ☺

The activities besides the general course ☹ 1(0%) – 2(0%) – 3 (10,5%) – 4(42,1%) – 5(47,4%) ☺

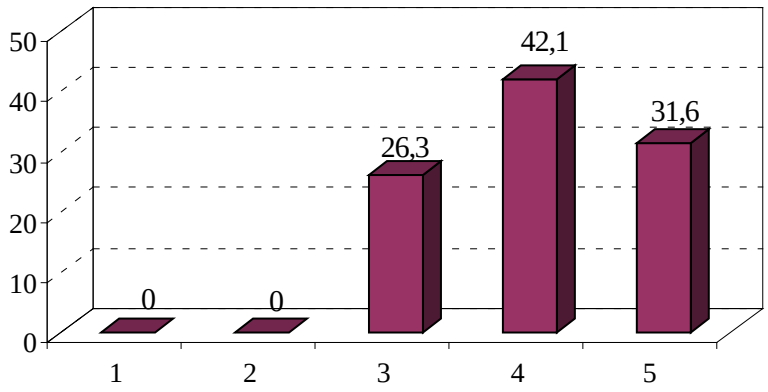



Fig. 21 Do you think participation in the IP will help you in your further studies/career?

☹ 1(0%) – 2(0%) – 3 (26,3%) – 4(42,1%) – 5(31,6%) ☺

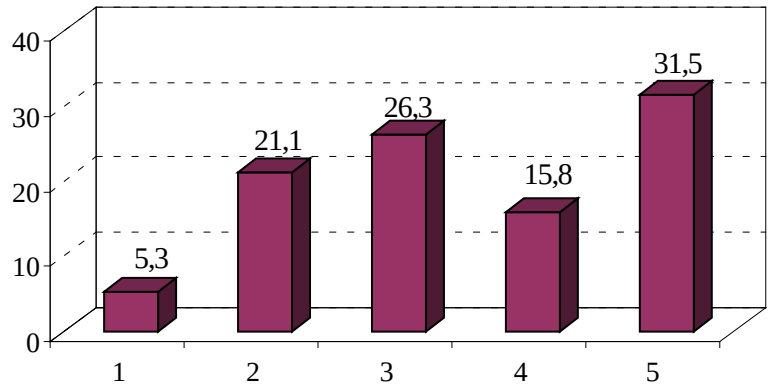



Fig. 22 Do you think participation in the IP will help you in finding a job?

☹ 1(5,3%) – 2(21,1%) – 3 (26,3%) – 4(15,8%) – 5(31,5%) ☺

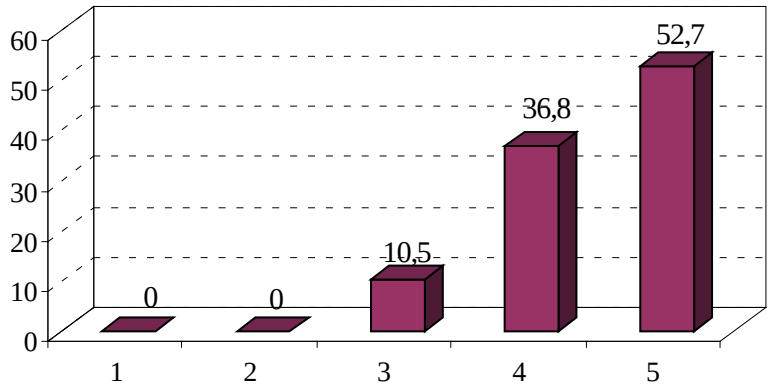



Fig. 23 Overall evaluation of the IP:

☹ 1(0%) – 2(0%) – 3 (10,5%) – 4(36,8%) – 5(52,7%) ☺

## 7. CONCLUSION

There was realized the IP Erasmus course in three European countries during the years 2011-2013. After realization of the teaching process it was given to students the questionnaire to improve the quality of the educational process. It has been done the SWOT analysis to establish the week and strong features of IP. After calculation of percentage evaluations of questionnaire, the most answered questions were evaluated with more as 80% of success, it means about the high quality of course. The questionnaire was very useful to improve the course contents in sense of better orientation to practice, because only 69,42% of students answered, that IP will help them in finding a job. The SWOT analysis helped us to satisfy all requirements of students.

EU countries are responsible for their own education and training systems, but the EU helps them set joint goals and share good practices. The new Erasmus+, programme is designed to tackle youth unemployment by improving young people's skills and employability. Experience and student feedback gained of IP will help increase quality of other planned international educational courses.

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