The Ministry of higher and secondary special education of the Republic of Uzbekistan

Tashkent State Technical University named after Abu Raikhan Beruni

REPORT
on the results of the work for 1.5 years

April 3-6, 2012

COORDINATOR
Professor. Z. Shamsiev
Departments involved in the project

- Mechanical Engineering
- Electronics and Automation
- Aviation
- Economics and Management
- Energetics
- Geology and Mining
- Oil and Gas

Basic

Duplication

Included in the course of the project
The working groups

Team work on the project was formed in the form of working groups (WGs) within each 3-basic departments (22 members total):
Electronics and Automation, Aviation, Mechanical Engineering

Group leaders appointed deans
<table>
<thead>
<tr>
<th>№ п.п.</th>
<th>Date</th>
<th>The above questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>October 12, 2010</td>
<td>Discussion of project goals and objectives and work plan.</td>
</tr>
<tr>
<td>2</td>
<td>November 10, 2010</td>
<td>Consideration of issues to ensure wide publicity of the project.</td>
</tr>
<tr>
<td>3</td>
<td>December 5, 2010</td>
<td>Discussion and decision on the placement of faculty laboratories at the base.</td>
</tr>
<tr>
<td>4</td>
<td>January 7, 2011</td>
<td>Study the content of training modules and courses. The discussion forms the introduction to educational programs and plans.</td>
</tr>
<tr>
<td>5</td>
<td>February 24, 2011</td>
<td>Meeting on the agreement of the text and the production of booklets and information booths.</td>
</tr>
<tr>
<td>6</td>
<td>May 5, 2011</td>
<td>Discussion of the conference in BTU from April 26-May 2, 2011, discussion and approval of a plan of the project. The distribution of responsibilities.</td>
</tr>
<tr>
<td>6а</td>
<td>September 23, 2011</td>
<td>Monitoring Project TEMPUS expert NTO (Head of the &quot;Standards&quot; TSRVSSPO).</td>
</tr>
<tr>
<td>7</td>
<td>October 5, 2011</td>
<td>Discussion of results of operations for a year. The decision to remove the comments and consider suggestions.</td>
</tr>
<tr>
<td>8</td>
<td>October 28, 2011</td>
<td>Meeting of the Faculty, &quot;Electronics and Automation.&quot; Subject: Information on the conference on the project TEMPUS &quot;KRIST&quot; (Astana, (24 - 27 October 2011, Kazakhstan) and the ability to use its results in the learning process of the faculty.</td>
</tr>
<tr>
<td>9</td>
<td>January 20, 2012</td>
<td>Review of PPP candidates and postgraduate students for training in universities in Europe, the discussion of the results of the monitoring project on November 23, 2011 with the Director EAEAS TEMPUS project.</td>
</tr>
<tr>
<td>10</td>
<td>March 20, 2012</td>
<td>Discussion of monitoring of the project in light of advances previously completed projects.</td>
</tr>
</tbody>
</table>

Note: all of these meetings (with the exception of the meeting of 20.01.2012 г, were held with the participation of Vice Rector for Academic Affairs.
<table>
<thead>
<tr>
<th>№</th>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>October 5, 2010.</td>
<td>Workshop at the Rector TSTU. Discussion of the TEMPUS project «PROMENG». Appointment of project co-ordinator, review arrangements and the appointment of a responsible person (vice-rector) of the University for the implementation of the project. Number of participants -10. Attended by the deans of faculties basic, the head. Chairs, Vice Rector for Academic Affairs.</td>
</tr>
<tr>
<td>2</td>
<td>March 30, 2011</td>
<td>A round table on «PROMENG» in the aviation department TSTU. Representatives of the Institute of De Nayer (Belgium), a Turkish company JEODIJITAL, Chamber of Commerce of Uzbekistan, the Centre for Higher and Secondary Special Vocational Education of Uzbekistan, Uzbekistan NTO. Number of participants - 15h.</td>
</tr>
<tr>
<td>3</td>
<td>May 5, 2011</td>
<td>A working meeting at the Pro-Rector for Academic Affairs University. Discussion of the results of the conference in BTU from April 26-May 2, 2011, approval of a plan of the project. The distribution of responsibilities. Number of participants - 8 persons, including deans of the faculties of basic, the project coordinator, heads of departments.</td>
</tr>
<tr>
<td>4</td>
<td>16-17 June 2011</td>
<td>Coordinating scientific seminar. Representatives of the consortium members (KIEI, FerPI, CCI of Uzbekistan, the Centre for Higher and Secondary Special and Professional Education at MHSSE RUZ), including the heads of TSTU STS Uzbekistan, companies and organizations outside the consortium of the project «PROMENG» students. Number of participants -34 people. Venue - Aviation Department TSTU.</td>
</tr>
</tbody>
</table>
Monitoring project with the Director of the Executive Agency Education, Audiovisual and Culture (EAEAC) TEMPUS project of the European Commission (in the form of the conference was held)
23 November 2011

Participants:
FerPI and KIEI, EAEAS (Director Klaus Haupt), STS Uzbekistan (A. Abdurakhmanov), representatives of the Center for Higher, Secondary Special Professional Education Ministry of Higher Education Uzbekistan, the Uzbek Chamber of Commerce and industry, agencies and organizations.

Amount of participants - 35 people.
The basis for the conference (monitoring): the order (№ 01/9-05-343) of the rector, 11.11.2011
The main proposals (remarks), as reflected in the conclusion of monitoring
(November 23, 2011)

1. Give special attention to attracting young university staff and students to work on the project.

2. Study the issue using the results of earlier projects from Tempus in Uzbekistan, as follows:
   - «NC CAD - New training program for CAE / CAD / CAM» (TADI)
   - «DABUBU: the development of links between universities and business" (University of Westminster).
1. In the first sentence of the age composition was analyzed.

It turned out that we have to work on the project were initially attracted young workers and students, whose share in the working groups of about 80%. The average age of employees recommended for refresher courses at universities in Europe, is 35 years, among them there are two graduate students.

2. In the second part of the proposals have been worked out project materials «NC CAD - New training program for CAE / CAD / CAM» (TADI) and «DABUBU: the development of links between universities and businesses," received from the executors

The decision: use the results of these projects in the educational process and activities of the ELM-Office, "The labor market of graduates of the University," for which is currently being developed and the position of the preparatory work for his organization.
Activities to publicize about the project

Number of informational meetings held – 17
• 3 meetings held by faculty, with graduate students. Were reported to the aims and objectives of the project, its importance for the development of the educational process of the university.

November 5, 2011:
- The presentation of the results of the project during the reporting period for students and teachers of 3 basic faculties (and have been invited to other departments), the speaker coordinator prof. Z. Shamsiev,
- read introductory lecture on "Principles of TRIZ", lecturer Prof.. Z. Shamsiev.

Number of participants - 30 people, including students, faculty deans and head departments.

Place of the event - the main building of the University
Reason for: the order (№ 01/9-05-314 )of the rector of 10.10.2011
In October and September 2010 visited five stream of lectures
Bachelor and Master classes 8, which was given detailed information about the project.
The meeting was held with participation of heads of departments and faculties.
The events in general, attended by more than 60 teachers, including heads of departments, faculties and more than 150 bachelor and master students.
Information stands

Designed and manufactured IS
Number of units: 4
They are located on the faculties of:
1. Electronics and Automation,
2. Mechanical Engineering,
3. Aviation,
4. The building of administration.
The state of the renovation of existing curricula and programs

- analyzed **33** Master specialties,
- to upgrade the selected **16** Master specialties,
- within the **16** specialties examined **35** Master disciplines.

Upgrading was a part of the Departments of 3 basic faculties and in addition to the department. "Environmental protection" facts. "Oil and gas."
1. Department of "Radio and professional education“
Training course on "Applied Informatics and Digital Data Systems "will be included in the study disciplines:
• Radio receiving devices ultrahigh and optical bands - 43 hours
• Ultrahigh frequencies radio transmitters and optical band - 43 hours

2. Department "Instrumentation“.
Course CAD / CAM / CAE design of the electronics is included in the curriculum and program disciplines:
• Fundamentals of CAD - 60 hours
• Design of medical devices - 70 hours
Department "Materials Science and Technology of Metals."
In the curriculum of the specialty, "Materials Science and Technology of Materials" Enabled course "Monitoring and engineering support for quality" - 100 hours

Department "Technological machinery and equipment."
In the curriculum of the specialty "Machines and technology of welding production" includes three training courses:
• Monitoring and Quality Engineering support (120 hours)
• Theory and practice of engineering problems (70 hours)
• Re-engineering (70 hours).

Department "Technology of Machine Building"
Department "Surface transportation systems and service"

recommended for inclusion: Monitoring the quality of support and engineering, theory and practice of engineering problems, Re-engineering. The issue is in the study.
Accepted for inclusion in the curricula and Master Programmes: Specialty "Installation and repair of aircraft and ground equipment“ - 5A310401:

Study subjects:
CAD / CAM / CAE design for mechanics - 120 hours
Monitoring the quality and engineering support - 80 hours

The training modules:
Theory and practice of engineering problems - "TRIZ" - 8 hours
Simulation of manufacturing systems - 16 hours
Re-engineering - 12 hours
Fundamentals of certification based on ISO standards series - 16 hours
Soft Skills for Engineers - 16 hours
Specialty "Restoration and repair of aircraft" - 5A310402:

Study subjects:

- **CAD / CAM / CAE design for mechanics** - 120 hours
- **Monitoring the quality and engineering support** - 80 hours

The training modules:

- **Theory and practice of engineering problems** - "TRIZ" - 8 hours
- **Simulation of manufacturing systems** - 16 hours
- **Re-engineering** - 12 hours
- **Fundamentals of certification based on ISO standards series** - 16 hours
- **Soft Skills for Engineers** - 16 hours
Speciality "Applied Space Technology", 5A310407:

Study subjects:

CAD / CAM / CAE design for mechanics - 120 hours
Monitoring the quality and engineering support - 80 hours

The training modules:

Theory and practice of engineering problems - "TRIZ" - 8 hours
Simulation of manufacturing systems - 16 hours
Re-engineering - 12 hours
Fundamentals of certification based on ISO standards series - 16 hours
Soft Skills for Engineers - 16 hours
Department of "Exploitation of Aviation, rocket and space technology"

• working in the training program (WTP) disciplines, "Technical maintenance of aircraft and their systems" master degree 5A520901-exploitation of aircraft and engines
Materials included a training module Re-engineering (volume: 4 hours)
in the WTP disciplines
“Fundamentals of the technical exploitation aircraft“ and “Repair of aircraft and aircraft engines“ directions the education of bachelor "Aircraft and Maintenance aircraft “
Materials included a training module Re-engineering (volume: 4 hours)
The course of CAD/CAM/CAE design based on Altium is included in the curriculum

- Master‘s “Technical operation of aircraft electrical systems and flight control and navigation systems”- 80 hours
- Education Bachelor's "Electrical engineering, electromechanics and electrotechnology" - 100 hours
The department of faculty, "Oil and gas"

Department of "Environmental Protection"
(Department and faculty introduced further in view of the course "Engineering and environmental management). The materials in this course are included in the discipline:

**Environmental Management**
Industrial Enterprise - 80 hours
Fundamentals of Environmental Auditing - 40 hours
Updated:
10 Master curricula,
33 Master courses,
3 undergraduate disciplines.

The list of curricula and courses to be updated to October 2012, will be drawn up in October 2012 after testing the newly introduced curriculum.
Total is now involved 11 departments and 24 teachers.

According to the "Mechanical Engineering" Faculty:
- department. "Materials science and technology of metals" - 1,
- department. "Technological machinery and equipment" - 2
- department. "Mechanical Engineering" – 1

2. For faculty, "Electronics and automation":
- department. "Electronics and Microelectronics" - 1,
- department. "Instrumentation" - 2
- department. "Radio and professional education" - 5

3. By "Aviation" faculty:
- department. "Aircraft" - 4
- department. "Operation of aircraft, rocket and space technology" - 2
- department. "Operation of the radio-electric equipment aircraft and airports" - 2.
Documents confirming the modernization of educational programs

For all upgrades relevant decisions of departments, educational plans approved at the university.
According to the order (№ 01/9-058) of the rector on January 13, 2012:

**Learning based on the updated educational plans and programs on all affected departments begins with 2012-2013 education year (September 2012).**
The state training facilities to create a computer classroom, laboratory of data transmission

1. Projectors and computers for the "Class CAD / CAM / CAE design" received in December 2011 (05/12/2011, and 12/12/2011), and accepted the leadership of Faculty, "Electronics and Automation." Dean is responsible prof. Nazarov A.M.

2. Premises for teaching laboratories refurbished. Computers are installed and connected to the network. The class is ready to initialize the software.

3. Training laboratory of class “CAD/CAM/CAE design" and "Station for receiving, processing and transmission of digital information" are administered by the department "Radio and professional education" faculty "Electronics and Automation." Head of Department is responsible Yu. Pisetsky.
The state of the acquisition and publication of new educational literature
Educational methods materials Project "KRIST", received from the adaptation to the educational process

2. Губин С.В., Шенетов Ю.А. Система планирования и управления в космической промышленности. Конспект лекций. 2011. 97 с.
13. Астахов Д.С., Петренко А.Н., Скорик Б.И. Проектирование электронных схем с использованием ALTIUM DESIGNER. Днепропетровский национальный университет имени Олеся Гончара. Днепропетровск. 2011. 80 с.
The state of creation ELM Office

1. Fundamentally resolved the question of the need to create a separate entity in the structure of ELM Office.
2. The Regulations ELM Office.
3. Inclusion in the staffing of the university staff units and the chief of the engineer in the Ministry of Higher Education decided.
4. The premises, the necessary equipment will be allocated after the approval of the staffing of the ELM Office on the grounds of the order of the rector.
The selection of teachers for training in EU universities

Candidates endorsed by the working groups of faculty (20.01.2012).
Criteria for selection:
• Professional competence.
• Active participation in the project.
• Having an advanced degree.
• Knowledge of foreign language (English)
• Age.

The composition of candidates:
• Dunyashin N.S. - head of the department, "Technological machinery and equipment" MMF (BTU).
• Pisetsky Y. head of the department, "Radio equipment and professional education" FEiA (BTU).
• Aliev H. – post doctorate, department of “Instrumentation” FEiA (Lessius University, Belgium).
• E. Erdanaev, PhD- MMF (Vilnius Gediminas Technical University).
• Khalilov H- teacher of department “Operation of aircraft and rocket” (Lessius University).
• Shamsiev ZZ -prof. of department "Aircraft" Aviation faculty (BTU).

The decision of the working groups on these candidates is fixed by order of the rector of № 01/9-058 on January 13, 2012.
A questionnaire survey was conducted for students of all faculties.

• For a survey of 100 questionnaires were distributed, 95 questionnaires were obtained with the answers.
• The survey showed the importance of modernization educational programs, the project PROMENG.
• Negative opinions were not.
• Most students tend to acquire knowledge and skills in the field of CAD/CAM/CAE, TRIZ and Soft Skills.
Number of publications – 3


- Improving graduate educational programs at the universities of Uzbekistan on the basis of an international European project TEMPUS «PROMENG». Collection of Articles of Association of technical universities. Moscow State Technical University named after NE Bauman. Moscow. , 2011.

Issued booklets in Russian and Uzbek languages.
Some of the photos regarding the project
Discussion of current issues with the Dean of the Faculty of Mechanical Engineering
Participants of the round table on «PROMENG» (Tashkent Aviation Department TSTU, March 29, 2011)
Scientific-methodical seminar.  
16-17 June 2011
Opening of the Seminar «PROMENG», 16-17 June 2011 in the educational computer lab, created the project TEMPUS «NCR»
Presentation of the National coordinator (A. Abdurakhmanova)
Presentation the Deputy Director of Radio Astronomy Observatory RUz
Presentation Vice-Rector of Academic Affairs of University
Introduction of the software system «Altium» to participants
Educational literature, received from Technical University of Berlin
The staff of the department "Technological machinery and equipment" MMF welcome «PROMENG»
The staff of the faculty of Electronics and Automation
The staff of the Mechanical engineering faculty welcome the project «PROMENG»
Informing students about the project «PROMENG»
Laboratory production of electronic modules for communication for small student satellite BTU (NCR)
Radio communication with a small student satellite BTU (NCR)
Ceremonial start of the first lessons in the computer lab (NCR)
The student Islamov A. shares his knowledge on space technology, acquired in BTU.
The lesson on space technology in a new computer lab
Thank you for your attention!