ANNEX IV

Intermediate Report on implementation of the project (IR), Statement of the costs incurred and Request for Payment

TEMPUS IV
(Sixth Call for proposals EACEA No. 35/2012)
Joint Project / Structural Measure

Project No. 543861-TEMPUS-1-2013-1-BG-TEMPUS-JPCR
Agreement No. 2013-4516/001-001
(Project No. / Agreement No.)

INTERMEDIATE REPORT	**DEADLINE**
• Report on implementation of the project • Statement of the costs incurred and Request for Payment	When 70% of the 1st pre-financing has been disbursed but not later than: - **1 December 2014** for 2 year projects - **1 June 2015** for 3 year projects

Structure of the Report

Annex IV/2	Declaration
Annex IV/3-5	Report on implementation of the project
Annex IV/6-8	Statistics and Indicators
Annex IV/9	Example showing how to fill in the tables of achieved/planned outcomes
Annex IV/10	Table of achieved/planned results
Annex IV/11	Summary Report for publication
Annex IV/12	Statement of the costs incurred and Request for Payment
Annex IV/13	Acknowledgement of receipt
Annex IV/14	Check-list

One original (with original signatures) and one copy are to be sent by the deadline by registered mail (date as per postmark) to:

Education, Audiovisual and Culture Executive Agency (EACEA)
Erasmus+ : Higher Education - International Capacity Building (Unit A4)
Mr Ralf Rahders
Head of Unit
BOUR 02/17
1, Avenue du Bourget
BE-1049 Brussels

Please also send the electronic version to eacea-tempus-project-management@ec.europa.eu when submitting the paper version of the report.

DECLARATION

This declaration should be completed and signed by the following people:

1. the contact person at the co-ordinator (institution);

2. the person who is legally authorised to represent the co-ordinator (institution).

We, the undersigned, certify that we have submitted all the required documentation, including the documents mentioned in the checklist.

Furthermore, we certify that the information given in this Intermediate report is correct to the best of our knowledge and complies with the requirements of the provisions of Article I.4 and II.23 (Annex VI) of the Grant Agreement.

We are aware that amendments to these documents will not be accepted after the date of submission.

Name of the co-ordinator (institution): Technical University of Sofia

Name of the contact person : Slavka Tzanova	Name of the legal representative: Georgy Mihov
Position: Professor	Position: Rector, Professor
Place: Sofia	Place: Sofia
Date:	Date:
Signature:	Signature:

Stamp of the co-ordinator (institution):

REPORT ON IMPLEMENTATION OF THE PROJECT

Please provide an overview on **implementation of the project**, by following the instructions below.

Overall achievements

Please provide a description of the activities carried out since the start of the project and describe to what extent, the results achieved since the beginning of the project, are contributing to the project objectives.

Through domain/job analysis the necessary knowledge, skills and competences in nanotechnologies were defined in terms of learning outcomes. A survey on the necessary competencies was developed by SNI and evaluated by the partners first, on-line, and then peer-reviewed during the second project meeting. The survey was distributed to 200 Nano-companies and researchers in order to meet the industry employment needs and the needs of the researchers/teachers to help provide students with the most relevant skills and competencies in this field. According to the need analysis and towards the learning outcomes defined, 20 courses for the new skills in nanotechnology training are under development (see the list of the courses in section "Development of programmes and courses").
To facilitate the mobility of students between institutions in Israel and Europe, to each course credits had to be provided, compatible with European Accreditation Transfer System (ECTS) requirements. To achieve these goals HUJI organized two meetings of institutional representatives including Bologna Process consultant and module coordinators. The first meeting introduced the Bologna process principles by the consultant. By the end of this meeting a general module plan was introduced. In the second meeting lead also by the consultant, each participant introduced his module structure and its logic was discussed. In addition more detailed discussions about grading system, diploma supplement and quality assurance were performed.

Syllabi of the 20 courses were designed and credits for each course were determined.
With these activities the first project objective was achieved.

To achieve the second project objective, the TAU Computing Division organised two training workshops on the video-recording technique and course development in EduNano Moodle environment.
The contents for the defined learning outcomes were designed and the process of video-recording lectures and practical work in the Nano laboratories of partner institutions started.

The video-records for the following courses are ready:
TAU - Introduction to Surface Science
TAU- Atomistic Simulation of Materials
Although the much higher cost of the web-based materials development (compared to the videorecording of lectures) TUS is developing two Web-based courses and their prototypes are uploaded in the EduNano platform. Some laboratory practice at TUS will be recorded in July after the project meeting in Bulgaria.

The video-records for the following courses are in an advanced stage:
TAU- Fabrication of Microelectromechanical System (MEMS) Devices
SPM technique and its applications in research and in nanotechnology industry - Weizmann
Into materials and nanotechnology' for high school teachers - Weizmann
Bio-nanoelectronic devices for biosensing - Polito.
Biotechnology and spintronics courses: CIME
Advance Topics in Electrooptics and Nano-Photonics: BGU
Advanced Materials and Nanotechnologies for Electrochemical Energy Storage: Elbit

The video-records for the following courses are in preliminary stage:
Molecular electronics for the realization of novel nanoelectronic devices.
Nanotechnology- Journey through time and space towards the future drugs-BGU

During the third project meeting at BIU peer review of first prototypes was done and a short workshop on the system for recording and publishing the multimedia materials was held.
70% of the activities to achieve the second project objective are done.

TAU Computing Division created the EduNano Moodle platform, created accounts of all teachers and course

developers and opened 20 templates for the e-learning courses. During the seminar on video-recording and the third project meeting training on the development of courses in Moodle was also done. The first prototypes of the following e-learning courses are in the EduNano Moodle platform:

Design of Nanoscale MOS ICs (TUS)
Nanomaterials (TUS)
SPM technique and its applications in research and in nanotechnology industry (Weizmann)
Into materials and nanotechnology' for high school teachers (Weizmann)
Introduction to Surface Science (TAU)
Atomistic Simulation of Materials (TAU)
Fabrication of Microelectromechanical System (MEMS) Devices (TAU)
Advanced Materials and Nanotechnologies for Electrochemical Energy Storage: Elbit

The EduNano platform address is:
http://edunano-lms.tau.ac.il/
The access as a guest:
usernme: demouser
password: user1-Demo

With the above results 30% of the activities to achieve the third project objective are done.

QA plan was developed by the external evaluator from Open University Netherlands. Quality assessment is based on a careful procedure of self-evaluation by the institutions involved in the project followed by external evaluation by peers. The formative evaluation was done during all project meetings: peer review of syllabi, contents, video-recording procedures and multimedia materials production. Based on evaluations the management (PSC) of the project made the necessary decisions and plan activities for their implementation.

Coherence with the workplan and comments on deviations and modifications

Please write in this section the main changes which have occurred compared with the original project proposal. (More detailed information is requested in the relevant sections below).

The main change is the delayed recording of lectures and laboratory experiments and the development of e-learning materials. It is due to the delayed purchase of the necessary equipment for implementing these activities. It was a very difficult task to collect information on the origin of the available on the market video-recording equipment and computers for the development of courses. The derogation from the rule of origin for the procurement of the equipment was approved on 18 December 2014 and the Israeli partners started the equipment purchasing procedure one year later than planned. It caused a delay in the development of the learning materials and we will need extension of the project for at least six months.

Another change was the inclusion of a new partner in the project consortium. Technion Research & Development Foundation Ltd. (TRDF) was added as an additional co-beneficiary in order to the handle administrative/financial tasks of Technion – Israel Institute of Technology (Technion). So, Technion started working on their project tasks only after the inclusion of TRDF, the amendment to the project being signed on 23 February 2015.

The legal representative of the co-ordinator, the Technical University of Sofia, was changed on 24 November 2014. This change did not cause modifications in the workplan.

The contact person from Grenoble Institut National Polytechnique (Grenoble INP) was also changed. Dr. Morey Chaisemartin left INP in December 2014 and only in April 2015 the new contact person Dr. Fesquet was appointed.

Obstacles and shortcomings

Please describe any obstacles and/or shortcomings experienced during the period covered by the report and the measures taken by the project team to address them.

The obstacles were described in the previous section:

- The delayed purchase of the equipment.
  TAU conducted the long derogation process of equipment purchase of items that does not apply the rule of origin and needed for the project. They contacted all Israeli providers if computing and video recording equipment and collected the necessary information on the rules of origin of the necessary for the project equipment, the EU partners helped them as well with the information from their countries.

The derogation was approved on 18/12/2015 and all partners purchased the equipment but the recording of lectures might be delayed.

- Inclusion of new partner because Technion Institute of Technology uses the services of an external private company TRDF for the administrative and financial management of the projects.
  This exceptional case caused a lot of additional work for the project co-ordinator but thanks to Tempus project adviser a solution was found – to include TRDF as a project partner. The project coordinator collected acceptance letters from all partners, required a mandate letter from TRDF and prepared the e-mail for inclusion of TRDF and an addendum to the project contract was signed on 23/02/2015. The partners from Technion started working actively on the tasks only after the inclusion of TRDF, i.e. – 15 months after the start of the project.
- The change of contact person from CIME delayed their courses development.

Development of programmes and courses

Please provide a description of the teaching/training programme(s) (undergraduate/postgraduate programmes, intensive courses, training modules to academic or non-academic staff, etc.) that the beneficiaries are developing or of the introduction of the new programme(s) and the state-of-play of these developments at the time of submitting the report. If unforeseen changes in the original plans occurred, please describe the type of changes and the measures taken to address them. Please also indicate the activities you plan to carry out before the end of the project. If this section is not relevant for your project, please write 'Not Applicable'.

For the learning outcomes defined, 20 courses for the new skills in nanotechnology education and training are under development (two more than the 18 in the project proposal). The syllabi and the contents of all courses are ready. Four courses are ready in the Moodle environment and the others will be recorded and uploaded till the end of September 2015.

The following syllabi and course contents for university students; SMEs or teachers training are developed by each partner:

POLITO: 'Bio-nanoelectronic devices for biosensing', 'Molecular electronics for the realization of novel nanoelectronic devices' (The 'Nano/microelectronic interfaces are part of this course) for PhD students and for MSc students, specialised technological courses

TUS: 'Nanomaterials for electronics' – MSc and PhD students
'Design of nanoscale MOS ICs' - BSc, MSc, suitable for industry

CIME: 'Biotechnologies' – Engineering schools MSc and PhD,
'Spintronics' PhD and MSc, suitable for industry

BIU: 'Nanoscience and nanotechnology. Why is 'nano' different and how is it useful?' MSc, PhD
'Kinetics of Materials' - MSc, PhD

BGU: 'Nanotechnology journey through time and space towards the future drugs' – high school students, Basics
'Advanced topics in electro-optics and photonics' – MSc PhD, suitable for industry

WEIZMANN: a course for chemistry high school teachers to disseminate nanotechnology in their chemistry lessons: 'Into materials and nanotechnology' for high school teachers,
and an advanced course in the field of nanotechnology focusing on the 'SPM technique and its applications in research and in nanotechnology industry'; MSc, PhD, suitable for industry

HUJI: 'Microscopic quantum coherence in engineered nano-systems' – MSc and PhD
'Nanotechnology in service of humanity' – BSc and general public including humanity students and social sciences and general public.

TECH: 'Quantum mechanics for the nano-programme' MSc, PhD
'Fundamentals of nano-biotechnology' – MSc, PhD

TAU: 'Introduction to surface science' MSc and PhD
'Atomistic simulation of materials' MSc and PhD
'MEMS fabrication' MSc and Industry

Elbit develops a course for industry training 'Advanced Materials and Nanotechnologies for Electrochemical Energy Storage Systems' – training professionals.

The competence matrix with the learning outcomes defined and the syllabi are published in the section "Results" of the project Web page (edunano.eu

Restructuring: university management and governance

Please provide information on the institutional changes that the project is introducing in the Partner Country beneficiaries (institutions), the state-of-play of project activities and any changes which occurred compared with the original plans. Please also indicate the activities you plan to carry out before the end of the project. Examples: establishment of new units/faculties, establishment/upgrading of libraries, establishment/restructuring of international relation offices, introduction of reforms to university governance (i.e. decision process, autonomy, accountability). If this section is not relevant for your project, please write 'Not Applicable'.

Not applicable

Staff (re-)training

Please provide a description of the activities carried out in order to train the staff of the partner country participating institutions. Please also provide an outline of the selection criteria for the different groups of people who have participated in the implementation of these activities. Please describe any change in comparison with the original proposal and indicate the activities that you plan to carry out before the end of the project.

HUJI organized two meetings of institutional representatives and module coordinators on Bologna Process and ECTS system.
The 1999 Bologna Declaration established a common platform aimed at integrating and standardizing the higher education curriculum and improving students' mobility between institutions. Based on the Bologna Process guidance, and on the experience they have gained during the implementation of its principles at the Hebrew University, Prof. Aaron Palmon and Dr. Tatiana Gornostaev prepared for the EduNano partners 5 presentations focused on:

1. Introduction to Bologna Process.
2. Learning Outcomes (definition, logic for change, Bloom's Taxonomy, guidelines, benefits).
3. European Credit Transfer and Accumulation System - ECTS (characteristics, planning, Workload, Bologna cycles).
4. Practical guidelines for syllabi writing.
5. Critical review and common problems in writing EduNano project syllabi.

After the presentation, the partners were asked to prepare syllabi for the courses of the EduNano project.
Syllabi sent to the Bologna Process consultant have been examined, and partners have received feedback and proposals for amendments. This process was carried out on individual consultation meetings.
On sequel summary meeting and followed by further correspondences, the problems, which partners encountered during the process of writing the syllabi, were discussed and possible solutions have been proposed. In this way, partners could also broaden their perspective on syllabi writing, by the experience gained by all partners as a group.
Further consultation meetings are upon demand throughout project time by individual partner request.

In summary, Israeli partners participating in the EduNano project were familiarized with the Bologna Process in general by both workshops and individual consultation meetings, and prepared syllabi to the proposed courses in particular.

A video recording and EduNano Moodle training workshops were held on 15th May 2014 and on 11 May 2015 at Tel Aviv University. It was attended by the teachers-representatives of all Nanocentres except Technion.

Staff mobility

Please provide an outline of the staff mobility scheme and the selection criteria used for the different groups of people that participate in mobility. Please describe the activities carried out so far, how mobility activities have been organised by home institutions and how mobility helped and/or will help achieve the project's objectives. Information about how the home institutions recognise the mobility should also be provided. If unforeseen changes in your original plan occurred, indicate the type of changes and the measures taken to address them. Please also indicate the activities that you plan to carry out before the end of the project.

The staff mobility included: attending project meetings, training seminars on ECTS and e-learning materials development and mobility for video-recording of lectures and training events.
The contact persons of the partners' institutions travelled for the project meetings to 1) Tel Aviv University for the project kick-off meeting; 2) Politecnico di Torino for the need analysis report and peer review of syllabi; 3) Bar Ilan University for co-ordination of project activities at the midterm of the project and for the intermediate report. The co-ordinator travelled to Grenoble for management purposes: to involve the new contact person of CIME in the project, to discuss the financial rules with the accountant of CIME and to support the partners from CIME in the syllabi development.
In addition to the contact persons, in the project meetings some teachers and managers from partners' universities participated, e.g. the presidents of Tel Aviv university, the rector and the financial director of the Technical University of Sofia; the head of Bar Ilan Institute of Nanotechnology & Advanced Materials; representative of Finance Dept from BIU; representative of the International relations office BIU.

In the two training seminars on ECTS in Israel, the teachers/course developers from all Israeli nanocenters participated. In the seminar for video-recording and the software for editing the records and the presentations all representatives of the nanocenters took part except a representative of Technion.

Student mobility

Please provide an outline of the student mobility scheme and the selection criteria for the different groups of students that participate in mobility. Please describe the activities carried out so far, how mobility activities have been organized by home institutions and how mobility helped and/or will help achieve the project's objectives. Information about how the home institutions recognize the mobility (credit transfer, double diploma, diploma supplement, etc.) should also be provided. If unforeseen changes in your original plan occurred, indicate the type of changes and the measures taken to address them. Please also indicate the activities that you plan to carry out before the end of the project. If this section is not relevant for your project, please write 'Not Applicable'.

The student mobility is planned for the third project year. After successful assessment students will be awarded certificates for courses with corresponding credits based on ECTS. These successful students from the 6 Israeli universities will have 1 week mobility in Grenoble and Torino for two practical courses in clean rooms.

Academic co-ordination and administrative management

Please describe how the division of labour is managed between the various beneficiaries, for both academic co-ordination and administrative management. Particular attention should be paid to the description of how this division of labour is managed in areas such as communication and the decision-making process used. Please also describe how day-to-day project activities are managed, indicating what kind of administrative support or other support you have received from the beneficiaries (institutions). If you encountered difficulties related to the management of the project, please indicate the type of problems and the solutions found to address them.

The decision making in the EduNano project is done by the Project Steering Committee (PSC) composed by the contact persons of each partner institution (beneficiary). For the reported period, all decisions were taken by consensus. The PSC had three face-to face meetings and four virtual meetings. All members of PSC are university professors or HRD experts from enterprises and they are responsible for both, academic co-ordination and administrative management. PSC members are responsible of carrying out the tasks, taking decisions and performing proper actions on a local level to ensure smooth project development. The coordinator is responsible for carrying out all executive actions in co-ordinating the project development and financial management, monitoring of progress with the PSC and preparing the project reports, communication with the Tempus Executive Agency, and project Web page with all deliverables maintenance, organisation of the PSC Meetings in Bulgaria. The co-ordinator has very helpful support by the expert form the Tempus Executive Agency, Ms. Tiberi, on all administrative issues, problem solving, clarification of financial rules and guidelines, helping with the solution of the problems with "rule of origin" for equipment purchase.

Mr. Jack Barocas from TAU is the Israeli local coordinator and he is taking care of the communication between Israeli partners on daily bases. As a local coordinator of the project, TAU is very frequently in touch with the partners, assisting them on local administration problems as well as content production and working with the partner from the industry. The Israeli ERASMUS+ office is available for assistance by mail and phone for supporting help on a short notice.

All partners have administrative support in the project implementation. Moreover, some of the heads of the institutions are directly involved in the project activities. The president of TAU and the rector of TUS, attended the kick-of project meeting at TAU; the financial director of TUS attended the third PSC meeting where financial guidelines and reporting were discussed; the head of the Institute for Nanotechnology and Advanced materials at BIU attended the second and third project meetings and he is involved in course development. National authorities – the Israel Nanotechnology National Initiative – also support the project activities through publishing the project survey on nanotechnology education on their site, taking part in the project meetings and evaluation of syllabi and courses.

In the project there are co-ordinators of specific academic tasks related to the project objectives. The partners from SNI co-ordinated the need analysis in Israel and EU countries and prepared the report. The partners from HUJI are responsible for the training on Bologna process and ECTS and they organised two seminars on these topics and together with TUS provided feedback on the pedagogical issues in learning outcomes definition and syllabi. TAU is responsible for training on videorecording and implementation of e-learning materials in Moodle environment. TUS is responsible for the evaluation of learning materials and usability of the learning environment.

The project Web-site is hosted by TUS. All deliverables are published on it. The main communication tool is Internet (e-mail edunano@ecad.tu-sofia.bg and Skype) and videoconferencing (four Web meetings). The list of project meetings is: kickoff meeting 2-3 March 2014; Edunano web meeting 9 April 2014; Edunano video recording and Moodle workshop 15 May 2014; ECTS workshop (HUJI) 26 May 2014; Web meeting on ECTS 10 July 2014; Torino meeting 15-16 September 2014; Second ECTS seminar in Jerusalem 22 October 2014; Web meeting on equipment purchase 25 December 2014; Web meeting on 20 January 2015; Bar Ilan meeting 19-20 April 2015.

Agreements between the coordinator and partners, with tasks, budget and arrangements for conflicts resolving were concluded during the first months of the project. To avoid reporting illegible costs at the end of the project, financial

reporting with copies of invoices and other documents were required from partners for the first advance of 40% and the next 20% were transferred to those institutions which reported their expenditures.

The financial management is done by the corresponding financial structures/departments at each beneficiary institution. There is only one exception. The Technion Institute's administration and financial management of all projects is done by one external organization TRDF. This fact was an impediment for the implementation of tasks by Technion and created management problems. The advance of the grant of Technion could not be transferred to the account of one external private company TRDF. The problem was solved thanks to the support by the Tempus project adviser, Ms. Alba-Chiara Tiberi who is helping the project management in all problematic issues or questions raised about the implementation. With consensus and signed agreements by all Contact persons form the beneficiaries' institutions, an amendment to the project was prepared for the inclusion of TRDF as a project partner. All these problems and procedures for inclusion of additional partner caused more than a year delay of the course development by Technion.

A common problem is that all beneficiaries have no experience with Tempus projects although some of the Israeli universities are involved in other Tempus projects and the financial rules and reporting are new for them, most of their financial departments consider the guidelines for FP7 applicable to the Tempus project. It causes additional non-planned workload for the coordinator and communication with each partner on daily bases. Thanks to the support by Israeli local co-ordinator, the Israel Erasmus+ office and mainly to the support provided by Ms. Tiber from the Tempus Executive Agency all problems, including the purchase of equipment, are solved and all tasks for the planned period done.

Equipment

Please outline the equipment purchased, explain where the equipment has been installed, who will benefit from it and have access to it and plans for future maintenance. Please also describe the activities that you plan to carry out before the end of the project, in relation to the equipment purchased/installed. If unforeseen changes in your original plan occurred, indicate the type of changes and the measures taken to address them. If this entry is not relevant for your project, please write 'Not Applicable'.

TAU conducted the long derogation process of equipment purchase of items that does not apply the rule of origin and needed for the project. After obtaining the permission to buy the equipment on 18/12/2015 TAU purchased all the equipment needed for the video streaming, storage and Learning Management system and completed the setup of all needed infrastructure for the project. TAU also purchased almost all need equipment for the course recordings and already is using them for content production: 2 servers for video streaming and Learning management infrastructure, 2 laptop computers for the lecturers, 2 laptop computers + 2 video cameras + 2 sound wireless microphones + 2 HDMI2USB video devices + 2 tripodes for courses recordings, and video editing software.
TECH: The equipment required for filming two courses during the coming summer has been purchased.
WEIZMANN: First phase of equipment for video-recording of the two courses was purchased.
BIU: The equipment required for filming the courses was purchased.
HUJI: Equipment required for video-recording the courses was purchased.
BGU: The first phase of equipment for video-recording of the two courses was purchased.

Dissemination

Please describe what has been done to disseminate the results of the activities carried out to date, both within the framework of the project and outside the project. In particular, you should refer to the definition of tasks and the dissemination channels used to make the project results available to larger beneficiary groups. If a web site for the project has been created, please provide the address. If there have been any unexpected positive secondary effects from project activities, please describe them in this section. Please indicate any change which occurred in comparison with the original plans for dissemination and the activities you plan to carry out before the end of the project, to disseminate the project results.

The first dissemination activity was the creation of the project Web-site, hosted by TUS. The information on the project objectives and results are published on it. On the project Web page the minutes of the meetings, the presentations, the reports and deliverables are also available in the corresponding sections:
http://edunano.eu/
Short project websites on each partners' extranet in the language of the country. Links to the Web pages on partner's domain:
TAU: https://www3.tau.ac.il/edunano/index.php/en/
WEIZMANN: http://stwww.weizmann.ac.il/g-chem/TEMPUS/index_eng.html
Technion website: http://rbni.technion.ac.il/?cmd=students.490
Samuel Neaman Institute Webpage on Tempus:
http://www.neaman.org.il/Neaman2011/Templates/ShowPage.asp?DBID=1&LNGID=1&TMID=580&FID=964&IID=1366
INNI helped us distribute the need analysis survey: http://www.nanoisrael.org/article.aspx?id=24137
BIU: website for the TEMPUS EduNano Project :
HUJI:Website for the TEMPUS EduNano Project: http://www.nano.huji.ac.il/page/E_Learning_Courses

The project Learning Management System (LMS) is hosted by TAU and there are uploaded the recorded lectures, laboratory practices, e-learning materials for the courses:
http://edunano-lms.tau.ac.il/

It can be visited as a guest with:
Username: demouser
Password: user1-Demo

YouTube:
https://www.youtube.com/channel/UCZSf-OmLuuKRiHqorHyUIAA
Facebook
https://www.facebook.com/edunano.lms

We have a lot of support by the Israel Nanotechnology Initiative (INNI). They disseminate our project activities on their pages/newsletter: tp://www.nanoisrael.org/article.aspx?id=24137
Ron Blonder and Sidney Cohen presented the project activities and results in working group at NSF workshop on Nanoeducation in Arlington to researchers and teachers from USA, Sweden, Portugal, Singapore, Australia, China, UK, Israel. Slavka Tzanoova presented the project activities and the courses under development to the consortiums of two Leonardo da Vinci projects in which TUS is involved: OrthoBioMed and EvEnEf with partners from Greece, Italy, Spain and Bulgaria.
TAU took part in large dissemination activities, including giving talks in two EU projects: SESREMO (https://www.youtube.com/watch?v=jG08o9WZnRE) and MMANTEG - https://www.youtube.com/watch?v=QGkKZbnk6AI&list=PLNiWLB_wsOg7lskPnslTUV_d4CMdnh32K&index=12 , meeting industry leaders several times discussing the better engagement of academia and the industry. TAU also Presented EDUNANO project to Israel Higher Education Consul in several occasions including in a meeting at Israeli Console of Higher Education (Jerusalem) introducing EduNano to representatives of the financial comity (16 May 2015).
Jack met with one of the leading Israeli technology collages "ORT"s Senior Deputy Director General in order to establish cooperation between EduNano consortium and various Nano Education EU projects in which ORT participates.
Delivering a talk in front of senior academic staff at TAU which organized by local ERASMUS+ office to share Jack experience working in the framework of EU projects.
Meeting TAU Vice president on International academic cooperation's regarding EduNano and joint courses (28 April 2015)

Sustainability

A project is 'sustainable' when it continues to deliver benefits to the project beneficiaries and/or other target groups for an extended period after the EU's financial assistance has ended. Sustainability may not be relevant for all aspects of a project; in each project some activities or results may be continued, while it may not be necessary to continue others. Sustainability is relevant for issues such as: academic/socio-economic/institutional support (describe the measures undertaken to formalise or institutionalise any links with local non-university partners, to obtain official accreditation of new curricula, etc.), involvement of members from the beneficiaries (institutions)(ownership/motivation), effective management and leadership, active participation of the target group, forecast of needs, availability of resources to continue, making the most of results achieved and a measurable medium/long term impact (long-lasting effects of project cooperation, as well as impact on the beneficiaries (institutions) and target groups). Please explain which of your planned activities and results must be maintained to make your project sustainable. Describe which measures have been taken so far to realistically ensure the continuity of those activities and results beyond the original life- cycle of the project (even when the project is no longer financed by Tempus). Please indicate any changes which occurred in comparison with the original plans and the activities you plan to carry out before the end of the project in order to ensure sustainability.

To make our project sustainable, we intend to maintain the delivery of the e-learning courses, the collaborative use of the e-learning materials by the Israeli universities and high schools and the collaboration with the EU universities, including the students' mobility. To insure the sustainability of project results the following measures have been taken:

- The courses are designed for the learning outcomes defined as a result of the need analysis. But nanotechnologies are developing very rapidly and in order to meet the users' needs (mostly of the industrials – the future employers of students) the survey used for the analysis is still active on the INNE Web site and it will be maintained till the end of the project.
- In the course development, the students are involved from the first prototypes development and in all stages. Even the videorecording of lectures is done during the real classes, in face-to-face sessions. At the project meetings some decision-makers form the sector (e.g. from Elbit) participated as well the national training organisations and social partners (INNI).
- Because of the nature of these fast developing sciences, the courses will be regularly updated during and after the end of the project as well. The ICT-based content has two main advantages for the sustainability of the results: a) the students could access the courses from their countries, i.e. it insures virtual mobility without

additional financing; b) the content is easily changeable and upgrade-able what is mandatory for the fast developing nano-technologies.

- All courses for university students are academically credited given on a regular basis in the corresponding departments. The innovation is the e-learning and the possibility for common use of educational resources. There is research and development in nanotechnologies in pharmacology, medicine, electronics, chemistry, physics. So, not all courses will be used by each university but only those corresponding to the scientific area of the corresponding curriculum.
- After the project end, the courses will be integrated in the daily educational and training activities of the partner institutions in accordance with the second programme of INNI. During the project lifetime the Moodle learning environment is on the server of TAU. By the end of the project, we will establish a business model with the support of INNI (www.nanoisrael.org) to fund and maintain the project by the partners, so it will remain functional after the end of the funding of the project. In the worst case, the Moodle environment is easily transferable and it could be installed with all developed courses on each beneficiary's server.
- The ECTS is not used in Israel but applied in our courses it will facilitate the exchange of students between Israel and EU universities. Because of the differences of national lows in each country, we considered that at this stage planning accreditation of joint or multiple MSc degrees is not realistic. Each course is designed for specific learning outcomes, with credits for each course unit to be assigned after assessment, and adopted by the partner institutions delivering the corresponding curriculum. These credits will be used for students mobility in Europe and when the credit system will be adopted in Israel - in the regular credit transfer system of the country.

Quality control and monitoring

Please describe what monitoring activities the beneficiaries carry out, in order to assess whether the project proceeds according to the workplan. Please describe the strategy for internal and external evaluation of project results and include measurable quality indicators for progress. In addition to the project results (courses, publications, new institutional structures, etc), you should also pay attention to the project management strategy. In particular, explain what instruments you use to ensure effective quality control (i.e. the Logframe approach, feedback questionnaires for evaluations or surveys, swot analysis, etc.) and who is involved in evaluation (i.e. committee(s), validation commission(s), accreditation board(s), etc.). For external evaluation, please mention the role of independent experts or peer reviewers providing a summary of their evaluation plan and report(s). Please indicate the activities carried out to date, any change which occurred in comparison with the original plans and the activities you plan to carry out before the end of the project.

Quality control and monitoring activities include a careful procedure of self-evaluation by the institutions involved in the project followed by external evaluation.

- Internal evaluation

On the first project meeting, a Work group on evaluation was created including one expert in educational sciences (for the pedagogical aspects of the courses), one expert in sociology (for the need analysis), one expert in videorecording and Moodle system and the project coordinator.

The questionnaire for the survey was evaluated by the partners on-line and decisions to present it to the industrials and academic users in form of learning outcomes necessary for nanotechnologies development were taken. The need analysis report was presented to the PSC and evaluated during the second project meeting. A decision to keep the survey active in order to maintain the learning materials up-to-date and corresponding the changing user's needs was taken.

On the second project meeting, the syllabi were evaluated of pedagogical point of view and template for all syllabi was adopted. The preliminary evaluation of the syllabi has been done during the training seminar on ECTS where guidelines for learning outcomes definition were provided. A peer review of planned courses was performed and some overlapping of contents in different courses was observed. A decision was taken to remove some overlapping topics and to work collaboratively on the common modules for two universities if the corresponding curricula include similar contents.

On the third PSC meeting, the first prototypes were evaluated. A decision-maker from the most important Israeli enterprise using nanotechnologies, Elbit Systems was invited and he presented the needs of the industry and suggested to develop more practice-oriented contents and also to orient the research to practical applications, not only to laboratory experiments. The course developers evaluated the usability of the Moodle environment and decision was taken to organise another training seminar for videorecording (use of the new equipment, videomaterials editing etc.) and e-learning materials development. It was organised next month by TAU.

Different users, including teachers, students, industrials, social partners were involved from the first project meeting and invited to all meetings and training seminars. All intermediate results, documents, prototypes will be available on the project Web site for assessment by potential users from HEIs and industry.

The conclusion for the first half of the project lifetime is that although the equipment was purchased with one year delay, the project proceeds according to the workplan what is also proven by the planned indicators of progress:
- the deadlines for deliverables were respected (need analysis report, competence matrix, syllabi, e-learning courses' first prototypes);

- at least 5 persons from each partner institution were involved in the analysis of needs and user requirements, and from different user groups (students, teachers, industrials, national authorities – INNI) were involved in the project activities ;
- 20 instead of the planned 18 e-learning courses are under development with video records of lectures/practical assignments in nanotechnologies.

- External evaluation

External evaluator was contracted by the project coordinator, expert in educational sciences and project evaluation fro the University of Twente. He developed the quality assurance plan. It suggests a set of quality assurance activities and quality controls embedded in it which are mainly focused on guiding the project partners in achieving high quality products. Not all quality assurance activities and controls are provided in the EU documents, nor are they explicitly discussed in the other project' documents. For convenience the activities are grouped thematically on : Project Management, Needs, domain and job analyses, Curriculum development and instructional design, EDUNANO web-based learning environment and content repository, Implementation of the courses and formal field trials, Dissemination and sustainability. The evaluator propose to use the Group Concept Mapping method to generate ideas completing a focus prompt ("One particular action needed to make the project successful is…"), sort them into groups and rate them on some values, e,g. importance and feasibility. As it was not accepted with enthusiasm by the partners in the beginning of the project we may use this method with a focus on sustainability of the project, i.e. to paraphrase "One particular action needed to make the project sustainable is…". The QA plan is published on the project Web site.

There was a field monitoring by Ms Marissa Gross Yarm, NEO Director, and Ms Dina Gallero, NEO Assistant, have carried out at the Hebrew University on 22 October 2014 with the participation of most of the Israeli partners. The monitors reported the following main findings and conclusions which we cite without changes:
" The project remains very relevant to the higher education system in Israel in terms of the modernization of the field of nanotechnology, development of high-tech learning technologies, and increasing efficient collaboration between Israeli universities.
• The partners are implementing the academic activities according to schedule. The needs analysis survey was sent to companies in order to see what their preferences are regarding nanotechnology courses and qualifications required by the industry in future work force. Interest has been expressed by many stakeholders who took the survey.
• The partners have finished preparing the courses syllabi and some courses are already being recorded during this semester. Important materials that were not available for students and researchers, for example work inside a clean room, will be available on the platform.
• The partners show flexibility with addressing problems and demonstrate a real commitment to the success of the project and to expanding the collaboration with each other. Furthermore, communication between the Israeli and the European Partners and the coordinator is very good and the Israeli partners express satisfaction with the coordination.
• Cooperation and collaboration between the partners is extremely successful and can serve as a basis for expanding their working relationship to different areas.
• The project is building the partner institutions' capacity to provide e-learning courses and develop new learning technologies. New knowledge, best practices and technologies are being provided to them that they did not all possess in the past.
• Collaboration between the institutions has also had a positive impact on the departments/centers and the institutions.
• Dissemination has begun to an extent, including through the use of the questionnaire. Interest has been expressed by the industry for the courses and by other departments and institutions to utilize the server/platform that is being built in the project. Involvement of Elbit Systems LTD and additional stakeholders from the industry increases the project's ability to strengthen university-business collaboration.
• As initially there was a problem at the Technion with the management of Tempus funds, the Technion has not been as involved in the project and has not implemented the activities. It appears that the problem will be solved in the near future, which will hopefully increase their involvement.
• Unfortunately, the partners have had severe problems finding appropriate equipment that meets the rule of origin. Overall, this has created a severe delay in the procurement of equipment and the implementation of objectives related to this equipment. Partners are trying to be creative and flexible in terms of finding alternative methods to solve the problem in the meantime. The partners have submitted a request for derogation from the rule of origin, which if approved, can hopefully enable the project to proceed as scheduled.
The monitors made the following recommendations:
• The equipment issue must be solved as soon as possible to ensure that the project is able to prevent further delays and enable the implementation of all activities. The project coordinator and partners should maintain contact with the EACEA regarding the derogation to the rule of origin and investigate other manners in which to purchase the necessary equipment. On this point, as you know, the Agency is currently assessing the request based on the complete documentation submitted at the beginning of December. A final decision should be taken before the end of the year.
• Work to ensure that the Technion is integrated into the project in the manner agreed upon with the EACEA. Once all new mandates are signed, effort should be made to encourage the Technion's involvement in all elements of the project. On this issue, we would like to remind you to send as soon as possible all the required documentation to the Agency in

order to finalise the procedure for the addition of the Technion Research & Development Foundation Ltd (i.e. the mandate, the endorsement letters from the partners and the formal request by the Coordinator).
• As strong interest was expressed by the industry as a result of the questionnaire, the partners should develop a dissemination plan for the industry as well and consider ways to integrate industrial stakeholders to make the project more sustainable.
• Discussions should be held on the usage of the platform for other fields and institutions and connected to the dissemination and sustainability strategies of the project."

The derogation to the rule of origin was obtained and the equipment purchased by all Israeli partners. It was done thanks to the efforts of TAU, the project adviser and EACEA. TRDF was included in the project and Technion started developing the planned courses. The course developers are not only teachers but researchers and they collaborate with the stakeholders from the industry. We invite the representatives of the stakeholders to all project meetings. With regard to the usage of the EduNano platform "for other fields and institutions and connected to the dissemination and sustainability strategies of the project" a seminar will be held in Weizmann institute on 9-10 September with involvement of high school teachers and students to disseminate project results and to attract young people to the education in nanotechnologies.

Gender balance

Please explain to what extent the principle of equal opportunities has been taken into account in the project implementation (i.e. gender analysis carried out, presence of women in decision-making bodies, balanced percentage share of women among the teachers or the enrolled students, etc.). Describe how the project helped to promote gender balance and to identify and address factors influencing gender discrimination.

In the project management: Women are the co-ordinator and six of the ten members of the project steering committee (PSC): four from the Israeli universities and one of the two SMEs. So, six of the eleven partners contact persons are women.

The following table shows the number of men and women among the teachers:

University/SME	*Male*	*Female*
BIU	*3*	*2*
POLITO	*3*	*2*
HUJI	*2*	
CIME	*4*	*4*
TUS		*2*
BGU	*5*	*5*
Weizmann	*1*	*1*
Technion	*2*	
Elbit		*2*
TAU	*3*	

Any other comment

Please provide in this entry, any relevant information you think might be useful for the assessment of your project's implementation (i.e. synergies with other projects, any support from external environment, networking with professional bodies, etc.).

We highly appreciate the support from the Project Adviser Ms. Tiberi and the Israeli National Erasmus+ Office. The Project Adviser helps us in all problematic issues, raised questions and doubts. We are also grateful to INNI which experts are helping us with contacts with industry, need analysis, dissemination on the organised by INNI events and on their Web site (http://www.nanoisrael.org/). The Israeli partners had several meetings with local Tempus office staff, Israeli Console of Higher Education and with ORT collage on collaborating in mutual educational projects.
As the EU beneficiaries can not buy equipment with then Tempus grant, the necessary equipment was bought with the budget of other projects.

Statistics and Indicators

This section aims to gather statistical data and indicators of performance <u>for the period covered by this Intermediate Report</u>

<u>Main targets</u>

	YES	*NO*	*N/A*
Teacher training Please indicate whether your project has links, targets or objectives related to teacher training	**X**		
VET Please indicate whether your project has links, targets or objectives related to Vocational Education and Training	**X**		
Qualification levels addressed by the project Please indicate whether your project has links, targets or objectives related to programmes at :			
- Bachelor level	**X**		
- Master level	**X**		
- Doctorate level	**X**		

<u>Training and mobilities</u>

Enter the <u>code of the partner country concerned</u> in the first lines and figures in the second and third:

<u>Training of partner country staff and students</u>

(Country of origin)

Number of academic staff from the partner country's Higher Education Institutions trained/retrained
Please indicate the number of teaching staff (professors, assistants with teaching tasks, etc.) trained and/or retrained <u>to the date of the report submission</u>:

	Country Code: IL	*Country Code:*	*Country Code:*	*Country Code:*	*Country Code:*
Number Male	5				
Number Female	12				

Number of non-academic staff from the partner country's Higher Education Institutions trained/retrained
Please indicate the number University administrative staff (librarians, staff from the International Office, IT specialists, etc.) trained <u>to the date of report submission</u>:

	Country Code:	*Country Code:*	*Country Code:*	*Country Code:*	*Country Code:*
Number Male					
Number Female					

Number of staff from the partner country's non Higher Education Institutions trained/retrained
Please indicate the number of staff of non HEI (enterprises, NGOs, Chambers of Commerce, Government, local administration, etc.) trained <u>to the date of report submission:</u>

	Country Code:	*Country Code:*	*Country Code:*	*Country Code:*	*Country Code:*
Number Male					
Number Female					

Number of students from the partner countries who have attended programmes/courses developed in the framework of the project
Please indicate the number of students from the partner countries that have been trained and/or retrained in the programmes/courses developed by the project <u>to the date of report submission:</u>

	Country Code:	*Country Code:*	*Country Code:*	*Country Code:*	*Country Code:*
Number Male					
Number Female					

<u>Academic/administrative Staff mobility</u>
In this project there is no planned mobility of more than 2 weeks

Links to European Higher Education policies

	YES	*NO*	*N/A*
Diploma supplement		X	

Please indicate whether the project contributes to the introduction of diploma supplements in the Partner Country university/ies.

Adoption of a system based on three main cycles, undergraduate (Bachelor), postgraduate (Master) and Doctorate	X		

Please indicate whether your project contributes to the achievement of the adoption of a system based on three main cycles.

Introduction of double/multiple or joint degrees		X	

Please indicate whether in the framework of your project the institutions involved plan to develop/issue double/multiple or joint degrees.

Establishment of an ECTS system	X		

Please indicate whether your project contributes to the introduction and/or development of the European Credit Transfer System at the co-beneficiary partner university(ies).

Promotion of quality assurance procedures at institutional or national level	X		

Please indicate whether the project contributes to the enhancement of the Partner Country university/ies' quality assurance strategies. For information on the 'Standards and guidelines for quality assurance in the European higher education area' : http://www.bologna-bergen2005.no/Docs/00-Main_doc/050221_ENQA_report.pdf

Qualification frameworks	X		

Please indicate whether the project contributes to developing of national qualifications frameworks and implementation at university level.

Lifelong learning policies and approaches	X		

Please indicate whether your project contributes to developing lifelong learning approaches

Modular curriculum structure	X		

Please indicate whether your project contributes to the promotion of modular curriculum structure.

New teaching and learning methods	X		

Please indicate whether the project contributes to the development of new teaching/learning methods at the Partner Country university/ies.

E-Learning	X		

Please indicate whether the project contributes to the development of an e-learning strategy at the Partner Country university/ies.

University/Enterprise cooperation	X		

Please indicate whether the project plans to encourage co-operation between the Partner Country university/ies and the private sector.

Links between the labour market and degree programmes	X		

Please indicate whether the new/restructured curriculum/curricula responds directly to the needs of the local and national labour market through internships, intensive training in the field, etc.

Links with other EU education programmes		X	

Please indicate whether your project is directly linked to other EU education Programmes (other than Tempus) such as Erasmus Mundus or the Life Long Learning Programme.
If yes, please indicate with which EU educational programme your project is linked:

Table of achieved / planned results

Title and reference number of the work package (WP)	**Management (WP1)**

Indicators of achievement and or/performance as indicated in the project proposal	Interim and final reports, financial reports delivered on time; with all tasks accomplished, results obtained and presented with the reports, project objectives attained.

Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
1	Coordination of activities, monitoring progress, communication in EU countries	01/12/13	31/05/15	IL, BG, IT, FR	Agreement between the co-ordinator and the partners and transfer of the 40% of the project grant. Set up of project steering committee (PSC) including the contact persons from each partner's institution; e-mail group with all partners, teachers, managers and e-mail group only with the PSC members. Collection of VAT declarations from the partners' universities for exemption certificate for the equipment purchase. Communication with the expert from the Tempus office for solving the problem with Technion; collection of acceptance letters by the partners for inclusion of new partner, TRDF, preparation of amendment to the project for their inclusion.	Agreements, bank transfer documents Exemption certificate (VAT) from the Agency. Amendment to the project for inclusion of TRDF as a new partner.
1	Coordination of activities, monitoring progress, communication in IL	01/12/13	31/05/15	IL	Co-ordination of activities of Israeli partners; organization of meetings including the virtual meetings; communication with the Israeli tempus office. Communication with partners for collection of information of their specific needs for recording and multimedia creation equipment; study of the available equipment from EU and collection of offers and information of the origin of the equipment.	Approval of the rule of origin of the specific equipment for videorecording and editing multimedia materials.
1	Reporting,	10/02/14	11/02/14	Brussels	Partners from TAU and POLITO attended the Tempus project	Guide for management of the grant agreement

	attending Tempus meetings organised by the Executive Agency	20/04/15	28/05/15	On-line	representatives meeting and distributed the guidelines and the presentations to the partners. They got feedback from the responsible Tempus expert on the questions of the coordinator, e.g. the agreements with the partners, grant transfer, the one-week practice of Israeli students in EU universities. Partners from Weizmann institute reported the tasks and expenditures for the first period and next 20% of the grand were transferred to them. Interim report is prepared with collaboration of all partners. The file is editable on-line in Google Drive and each partner provides her/his information and eventual opinions.	and templates for reporting mobility and timesheets published on the project Web site. Interim report by Weizmann institute and documents for bank transfer. Interim report presented on-time with all deliverables and activities for the reported period done.
1	Project steering committee meetings	03/03/14 15/09/14 19/04/15	04/03/14 16/09/14 20/04/15	Tel Aviv Torino Bar Ilan	Kick-off meeting: specification of project activities, definition of working groups. Co-ordination of activities for the first project objective achievement; report on the need analysis; review of pedagogical issues of learning outcomes definition and syllabi design. Co-ordination of activities for the second project objective achievement: courses development, video-recording ; discussion on the delay caused by the late purchase of the equipment and need of extension of the project duration.	Lists of participants, minutes of the meetings

Activities to be carried out to achieve this outcome (before the end of the project)

Activity N°	Activity Title	Start date	End date	Place	Description of the activity to be carried out	Specific and measurable indicators of progress
1	Coordination of activities, monitoring progress, communication	01/06/15	30/11/16	IL, BG, FR, IT	Co-ordination of activities for e-learning materials development, pilot tests and field trial, quality assurance, dissemination; communication with partners for evaluation of the delayed activities because of the lack of equipment and decision on the necessary extension of the project to be required.	Deliverables ready on-time; intermediate reports of partners; bank transfer documents for the next instalments; ToDo lists of PSC meetings
1	Reporting, attending Tempus meetings organised by the Executive Agency	01/06/15	30/11/16	Brussels Tel Aviv	Final project reports Meetings organized by the Tempus office and monitoring activities in Israel	Final project reports Audit report

1	Project steering committee meetings	15/07/15	16/07/15	BG	PSC meeting, discussion on the results of the intermediate report evaluation; workshop for evaluation of e-learning materials.	List of participants, minutes of the meetings Posters, presentations
		09/15	09/15	IL	Dissemination workshop in the framework of the Conference at Weizmann Institute	
		12/15	12/15	FR	PSC meeting on the pilot test	
		04/16	04/16	IT	PSC meeting on the field trial	
		11/17	11/17	IL	PSC meeting for the final report; open dissemination workshop	

Changes that have occurred in this result since the original proposal:

New partner TRDF was included in the project and an amendment to the project signed.
The legal representative of the co-ordinating institution was changed.
The contact person of CIME/Grenoble INP was changed because the first one has left the institute.

Please add as many tables as necessary.

Title and reference number of the work package (WP)	**Quality assurance, evaluation (WP2)**

Indicators of achievement and or/performance as indicated in the project proposal	Quality assurance plan, evaluation report

Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
2.1	Quality assurance plan development	02/12/13	23/12/13	NL	The external evaluator from Open University Netherlands designed the QA plan for the project. It was evaluated and accepted during the meeting in Torino	QA plan
2.2	Need analysis	02/01/14	30/09/14	IL, EU	Analysis of educational and training needs was done through a survey on the necessary knowledge and skills in nanote3chnologies distributed to 120 companies and educational HEIs in Israel and Europe.	Need analysis report
2.3	Formative evaluation	02/01/14	30/05/15	Torino Bar Ilan On-line	Survey for the need analysis peer review on the PSC meeting in Torino. Evaluation of the need analysis report on the meeting at BIU with recommendations to keep the	Oral reports – in the minutes of the meetings. Recommendations for

					questionnaire open till the end of the project in order to maintain the courses in line with labour market needs. Evaluation of the learning outcomes definition and syllabi design from pedagogical point of view (meeting at POLITO). Peer review of contents. Evaluation of the software for multimedia materials development and e-learning environments (meeting at BIU).	improvement of syllabi design and templates provided by instructional designers.

Activities to be carried out to achieve this outcome (before the end of the project)

Activity N°	Activity Title	Start date	End date	Place	Description of the activity to be carried out	Specific and measurable indicators of progress
2.3	Formative evaluation	01/06/15	30/11/16	IL, EU	Usability test of the e-learning materials; peer review of learning materials; pilot test; field trial.	Analysis of usability questionnaire, reports on the pilot test and field trial
2.3	Final evaluation report from external evaluator.	02/01/14	30/11/16		External evaluation of project activities and results.	Project evaluation report.

Changes that have occurred in this result since the original proposal:

Title and reference number of the work package (WP)	**Instructional design (WP3)**

Indicators of achievement and or/performance as indicated in the project proposal	Learning outcomes defined, syllabi and content for at least 18 e-learning and practical courses designed with corresponding credits, videorecording scenarios.

Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
3.1	Definition of learning outcomes, credits, syllabi, content development for	01/02/14	31/07/14		Definition of learning outcomes, credits, syllabi, content development for university students on: 'Bio-nanoelectronic devices for biosensing', 'Molecular electronics for the realization of novel	Syllabi for university students

	university students				nanoelectronic devices', 'Nanomaterials for electronics', 'Design of nanoscale MOS ICs', 'Biotechnologies', 'Spintronics', 'Nanoscience and nanotechnology. Why is 'nano' different and how is it useful?', 'Kinetics of Materials', 'Advanced topics in electro-optics and photonics', 'SPM technique and its applications in research and in nanotechnology industry', 'Microscopic quantum coherence in engineered nano-systems', 'Quantum mechanics for the nano-programme', 'Fundamentals of nano-biotechnology', 'Introduction to surface science', 'Atomistic simulation of materials'.	
3.2	Definition of learning outcomes, syllabi, content for SMEs	01/02/14	31/07/14		Definition of learning outcomes, syllabi, content for SMEs on: 'Advanced materials and nanotechnologies for electrochemical energy storage systems', 'Design of nanoscale MOS ICs', 'Spintronics', 'MEMS fabrication', 'Advanced topics in electro-optics and photonics', 'SPM technique and its applications in research and in nanotechnology industry'.	Syllabi for training at SMEs. Some of the courses for MSc and PhD students are suitable for training at industry. The course 'Advanced materials and nanotechnologies for electrochemical energy storage' targets only professionals.
3.3	Definition of learning outcomes, syllabi, content for teacher training	01/02/14	31/07/14		Definition of learning outcomes, syllabi, content for general public and teacher training on: 'Into materials and nanotechnology', 'Nanotechnology in service of humanity', 'Nanotechnology journey through time and space towards the future drugs', 'Nanoscience and nanotechnology. Why is 'nano' different and how is it useful?',	Syllabi for teachers' training Some of the courses are for BSc and MSc students and they are suitable for school teachers training. The course ''Into materials and nanotechnology' targets only the teachers' audience.

Changes that have occurred in this result since the original proposal:

20 instead of 18 courses are developed.

Title and reference number of the work package (WP)	**E-learning courses development (WP4)**

Indicators of achievement and or/performance as indicated in the project proposal	A common learning environment EduNano with at least 18 e-learning courses

Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
4.1	Video records of lectures and practical work	01/03/15	30/05/15	IL, IT, FR, BG	Video records of lectures, laboratory practical courses in: 'Bio-nanoelectronic devices for biosensing' 'Introduction to Surface Science' 'TAU- Atomistic Simulation of Materials'. are done and uploaded in EduNano platform.	Videos with some lectures and the practical lessons including in clean rooms.
4.2	e-learning courses	01/03/15	30/05/15	IL, IT, FR, BG	The e-learning courses in 'Nanomaterials for electronics' and 'Design of nanoscale MOS ICs' are available on the EduNano platform.	Web-based e-learning courses

Activities to be carried out to achieve this outcome (before the end of the project)

Activity N°	Activity Title	Start date	End date	Place	Description of the activity to be carried out	Specific and measurable indicators of progress
4.1	Videorecords of lectures and practical work	01/06/15	30/08/15	IL, IT, FR, BG	The video-records for the following courses are in an advanced stage: 'Fabrication of Microelectromechanical System Devices' - TAU 'SPM technique and its applications in research and in nanotechnology industry' - Weizmann 'Into materials and nanotechnology' for high school teachers' - Weizmann 'Bio-nanoelectronic devices for biosensing' - Polito. 'Biotechnology and spintronics courses' - CIME 'Advance Topics in Electrooptics and Nano-Photonics' - BGU The video-records for the following courses are in preliminary stage: 'Molecular electronics for the realization of novel nanoelectronic devices', 'Nanotechnology- Journey through time and space towards the future drugs' –BGU The videorecord of a laboratory experiment on nanomaterials will be done in July 2015.	Videos with some lectures and the practical lessons including in clean rooms for at least 18 courses. We are developing 20 courses.

4.1	e-learning courses	01/06/15	30/11/15	On-line	20 e-learning courses in nanotechonologied developed and delivered in the EduNano Moodle environment	e-learning environment (Web-based and a DVD copy for some courses to meet the needs/constraints of learners) with the courses delivered.

Changes that have occurred in this result since the original proposal:

Videorecording for the courses started only in March because of the delayed purchase of equipment. The final versions of the e-learning courses will also be postponed.

Title and reference number of the work package (WP)	**Implementation, pilot test (WP5)**

Indicators of achievement and or/performance as indicated in the project proposal	Common courses tested during last project year pilot test and implemented with corresponding credits.

Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
5.2	Seminars on Bologna process and principles of course design			HUJI	HUJI organized two meetings of institutional representatives and module coordinators. The first meeting introduced the Bologna process principles. In the second meeting ECTS system was explained and discussed and the principles for credits definition.	Training seminars for teachers on ECTS
5.3	Training seminar on e-learning materials development	15/05/14	15/05/14	TAU	A video recording and EduNano Moodle workshop was held at Tel Aviv University. It was attended by the teachers-representatives of all Nanocentres except Technion.	Training seminar on videorecording

Activities to be carried out to achieve this outcome (before the end of the project)

Activity N°	Activity Title	Start date	End date	Place	Description of the activity to be carried out	Specific and measurable indicators of progress
5.1	Courses implemented	30/11/15	30/11/16	IL	Common courses tested during last project year pilot test and implemented with corresponding credits. Mobility for practical training of Israeli students	Results reported in the final report with number of students in each course, student performance and assessment results, teachers' and other stakeholders' experiences.
5.2	Seminars on Bologna process and principles of course design	31/05/15	30/05/16	HUJI	In the third meeting, each institution will present its final results as regards to complying with Bologna process principles in his part in program designing.	Training seminar for teachers on ECTS implementation
5.3	Training seminar on e-learning materials development	31/05/15	30/12/15	TAU, POLITO or	Training seminar on e-learning materials development: multimedia materials editing, development of courses in Moodle, development of on-line tests	Training seminar on e-learning materials development

Changes that have occurred in this result since the original proposal:

The pilot test will start later when the courses will be ready because of the equipment purchase delay.

Title and reference number of the work package (WP)	**Dissemination (WP6)**

Indicators of achievement and or/performance as indicated in the project proposal	All reports and deliverables published in electronic form on the Web page. Prototypes of the courses and tests published for dissemination and evaluation by a larger audience. Papers in conference proceedings and reviews, project Web page with the demo courses, leaflet in English, Hebrew, Arabic, Bulgarian, Italian and French

Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
6.1	Project Web page	20/12/13	30/05/15	On-line	All reports and deliverables published in electronic form on the Web page: http://edunano.eu	Web page with project objectives, partners, planned activities, training seminars,

						workshops.
6.2	Dissemination materials	01/06/15	30/11/16	On-line	Publications in the newspaper of Israel Nanotechnology Initiative and in social networks and YouTube: http://www.nanoisrael.org/article.aspx?id=24137 https://www.youtube.com/channel/UCZSf-OmLuuKRiHqorHyUIAA https://www.facebook.com/edunano.lms	On-line publications, dissemination in the social networks
6.4	National Web pages			On-line	Web pages in the partner country language in each participating in the project country for dissemination of project activities and results to the larger audience in the country: https://www3.tau.ac.il/edunano/index.php/en/ http://stwww.weizmann.ac.il/g-chem/TEMPUS/index_eng.html http://rbni.technion.ac.il/?cmd=students.490 http://www.neaman.org.il/Neaman2011/Templates/ShowPage.asp?DBID=1&LNGID=1&TMID=580&FID=964&IID=1366 http://rbni.technion.ac.il/?cmd=students.490) http://nano.biu.ac.il/TEMPUS%20E-Learning%20Courses http://www.nano.huji.ac.il/page/E_Learning_Courses	Short Web pages for the project on the servers of each partner's institution.

Activities to be carried out to achieve this outcome (before the end of the project)

Activity N°	Activity Title	Start date	End date	Place	Description of the activity to be carried out	Specific and measurable indicators of progress
6.1	Project Web page	01/06/15	30/11/16	On-line	Maintenance and update of the project Web site	Web page with all project results.
6.2	Publications	01/06/15	30/11/16	IL, IT, FR, BG	Publications on conferences and in scientific reviews.	Papers (minimum 9) in conference proceedings and reviews
6.3	Dissemination materials	01/06/15	30/11/16	IL, IT, FR, BG	CD or DVD and Web-based demos of courses. Leaflet in all partners' languages.	DVD demo and leaflet in English, Hebrew, Arabic, Bulgarian, Italian and French
6.4	National Web pages	01/06/15	30/11/16	On-line	Maintenance and update with news and results of the Web pages in the partner country language	Short Web pages for the project on the servers of each partner's institution.
6.5	Open dissemination workshop	11/16	30/11/16	IL	Project final workshop will be organised, open to a large audience of all stakeholders in	Open dissemination workshop during the last project month.

					Israel. During the workshop the e-learning courses will be demonstrated, the project results will be reported with focus on the results of the exploitation- pilot test.	

Changes that have occurred in this result since the original proposal:

Travel costs for attending conferences are not eligible. So, the planned publications in conference proceedings can not be used for dissemination purposes.

Summary Report for Publication

Project title

Education in Nanotechnologies

Objectives

- To design syllabi and course content and assessment for regular and continuing education courses in nanotechnologies to meet the user needs and to determine the credits for each course unit, based on ECTS.
- To select innovative content for the defined learning outcomes and video-record lectures and practical work in the hightec laboratories of partner institutions.
- To adapt/develop new e-learning courses with modular structure for the innovated curricula of partner universities and to establish a platform and procedures for knowledge sharing inside Israeli academy, industry and students.
- To perform a pilot test and to start the implementation of the joint modules/courses delivery.

Outcomes

- Need analysis report
- Quality assurance plan
- Syllabi and course content for university students, training of professionals for industry and for teacher training
- Video-records of lectures and practical work and e-learning courses
- Training seminars for Israeli partners on Bologna process and ECTS
- Training seminars on e-learning
- Project Web site and Web sites on partners domains and in their languages
- Publications: on Israel Nano Initiative site, in Facebook and YouTube

Activities

- Analysis of need of the industry on education and training in nanotechnologies through survey;
- Training teachers on Bologna process, ECTS and on e-learning materials development;
- Instructional design: definition of learning outcomes of courses, development of syllabi and learning contents;
- e-learning courses development;
- Implementation of courses with corresponding credits in e-learning and blended education and training;
- Practical training of Israeli students in CIME at Grenoble INP and in Politecnico di Torino;
- Quality assurance through internal and external evaluation of the project;
- Dissemination of project activities and results.

Progress to date

Need analysis was done and the most important for the industry courses selected for development.
Learning outcomes as defined in the survey and approved by the respondents for industry and academia
Training seminars for teachers on Bologna process and ECTS and on videorecording and e-learning materials development
Syllabi of twenty courses developed and content selected
Videorecords of some lectures and practical laboratory practice done
First prototypes of courses developed.

Future developments

Development of e-learning courses
Specific tests for measuring knowledge and skills
Usability test of the e-learning courses
Pilot test
Field trial
Mobility of Israeli students for practical training
Dissemination through Web pages, publications, leaflets, posters, open dissemination workshop in Israel
Quality evaluation by external evaluator

Other remarks