

Application form

Please complete this form carefully with a computer

IMPORTANT: Please read the CDP+ instructions carefully as they are an integral part of this application form!

SECTION 1: General information about the project

Name of the coordinator , title and position at the faculty:	Zoran Budimac, PhD, full professor	
Applying institution:	Department: Department of Mathematics and Informatics	
	Faculty: Faculty of Science	
	University: University of Novi Sad	
Town: Novi Sad	Address (institution): Tra Dositeja Obradovića 4	e-mail: zih@im.ns.ac.yu
Phone (work): +381 21 458 888	Fax (institution) : +381 21 6350 458	Mobile (private): +381 63 8169 061

Novi Sad, 12.12.2005.

Place, date

[Stamp of the Faculty]

Signature-Dean

◆ Title of the course(s):

Software Project Management

◆ Please specify whether you intend to apply for one single course or for a package of courses (only 1-semester courses are eligible):

A) 1 COURSE

B) Package of ____ courses
 please indicate the number of courses
maximum 5 courses!

◆ Please specify whether you are modifying an existing course or introducing a new one:

A) Modifying an existing course

B) Introducing a new course

◆ Are you cooperating with a EU university/faculty in the frame of the proposed project:

A) YES (letter of endorsement should be enclosed)

B) NO

University/Faculty: University of Deusto, Faculty of Engineering, Bilbao, Spain,

◆ Please specify whether you are also applying for any kind of equipment:

A) YES

B) NO

SECTION 2: Budget

2.1 Total budget summary. Please specify the planned budget, item by item:

Description	Maximum amount per course	Number of courses	Requested amount (EUR)	Filled by WUS! Granted amount (EUR)
Stipend	1.500,00 EUR	1	1.500,00 EUR	
Literature	500,00 EUR	1	350,00 EUR	
Travel costs	600,00 EUR	1	600,00 EUR	
Accommodation costs	1.050,00 EUR	1	1.050,00 EUR	
Equipment (<u>WUS covers maximum 65% (i.e. maximum 15.000,00 EUR) of the total equipment value per application!</u>)	N/A	N/A		
Total requested from WUS:			3.500,00 EUR	
Equipment co-financed by the Faculty or other donor (minimum 35% of the total equipment value):				

2.2 Literature specification:

No.	Item	Item price (EUR)
1	Avraham F Shtub: »Project Management: Engineering, Technology and Implementation«	80,00
2	Richard Murch: »Project Management : Best Practices for IT Professionals«	40,00
3	Ashley Friedlein: »Web Project Management: Delivering Successful Commercial Web Sites«	40,00
4	Chris Kemerer: »Software Project Management: Readings and Cases«	100,00
5	Ted Klastorin: »Project Management: Tools and Trade-offs«	90,00
Total literature value:		350,00 EUR

2.3 Co-financing – required only if applying for equipment (must be documented with invoices or statements of co-financing!):

Donor	Item(s)	Planned or Obtained	Amount (EUR)
TOTAL:			

SECTION 3: Information about the course(s)

A) IF YOU ARE MODIFYING AN EXISTING COURSE, PLEASE ANSWER THE FOLLOWING SET OF QUESTIONS:

3.1 Information about the lecturer

Name of the lecturer, title and position at the Faculty	Zoran Budimac, PhD, full professor	
Applying institution	Department: Department of Mathematics and Informatics	
	Faculty: Faculty of Science	
	University: University of Novi Sad	
Town: Novi Sad	Adress (institution): Trg Dositeja Obradovića 4	e-mail: mira@im.ns.ac.yu
Phone (work): +381 21 458 888	Fax (institution): +381 21 6350 458	Mobile (private): +381 63 8169 061

3.2 Title of the course, semester (2006-2007 academic year), and level (undergraduate/postgraduate)

Software Project Management, summer semester, undergraduate level

3.3 Please describe the existing course in terms of:

3.3.1. Content

- | |
|--|
| <p>The course covers the following topics:</p> <ul style="list-style-type: none"> • Introduction to project management • Software process models – characteristics and design • Deeper coverage of software process models • Quality of software development process and its standardization • TSP (Team Software Process), • CMM (Capability Maturity Model), • Project management <ul style="list-style-type: none"> ◦ Feasibility study, the role in requirements engineering, ... ◦ Cost estimation ◦ Tracking (tools, metrics, ...) • Project management processes according to PMBOK and life-cycle processes (primary, supporting, organizational) • Software process metrics • Maintenance and maintenance metrics • Some elements of Computer Ethics |
|--|

3.3.2. Teaching methodology

Lectures are supported by ,power-point' slides, handouts of which are delivered to students after the lecture.
During practical exercises students (divided into teams) 'simulated' the real-world process of managing the software project. The software project was introduced through the 'simulated customer', a short problem statement, and a fully developed requirements specification. For project management, a MS Project software tool is used.
During the life of the project teams exchanged roles in order to better appreciate the role of proper documentation throughout the life of project and to realize the difference between managing and 'doing'.

3.3.3. Examining methodology

Exam was organized as:

- Constant review of practical work done during practical exercises (work on the project.) This was conducted continuously during the semester.
- Oral exam covering topics taught during lectures.

3.3.4. Target group, expected number of students, and number of hours per week

Students of the 8th semester of studies of "Business Informatics" at the Faculty of Science. There were 35 students enrolled.
The course was also of interest to graduate students and young professionals from software industry.

3.3.5. Detected weaknesses and disadvantages of the existing course

The course was presented for the first time during the previous semester, and it was obvious that it requires additional refinement, and deepening.
Besides, the only available literature for the students in Serbian, were the Power Point presentation handouts. Judging from the survey given to the students at the end of the course, their main objection and remark was a lack of literature.
Second important point was that the most of the literature used for the course creation was a material downloaded from the Internet – papers, PhD and Master thesis, and similar. There was an obvious lack of books and textbooks, so creation of appropriate presentations was much more difficult and (probably) there is a room for reforms and improvements.

3.3.6 Context (link to related courses, description of the course within curriculum)

Faculty of Science in Novi Sad was until the last school year mainly interested in education of *mathematically* oriented students of computer science. Only recently, a new curriculum was adopted, more oriented towards „business informatics“. A lot of new subjects were introduced, all of them adjusted to the demands of Bologna convention. Some of the most important are definitely: „E-business“, „Software Project Management“, „Software Engineering“, „Information Systems“, and „Ethical Aspects of Informatics“. The main reason for this claim is that it is for the first time that *this kind* of subjects - much more oriented towards business, sociology, psychology, and economy - is taught at this Faculty. For now, subject „Software Project Management“ is taught in the 8th semester, and is *the only* subject of a kind for the „business informatics“ curriculum.

Students enrolled this school year – 2005/06 – are enrolled according to the new curriculum. This means that during the 1st semester they attend a course „Ethical Aspects of Informatics“ which – judging by the first experiences – seems very well accepted by the students. In the future, this subject will add to the quality and understanding of a subject „Software Project Management“

3.4. Please describe the modified course in terms of:

3.4.1. Content

The course will cover the following topics (the order will be influenced by the order of practical assignments):

- Introduction to project management
- Communications management
- Software process models
- Deeper coverage of some software process models
- Quality of software development process and its standardization
- Project management processes according to PMBOK and life-cycle processes (primary, supporting, organizational)
- Assessment procedures: ISO, SPICE, PSP (Personal Software Process), TSP (Team Software Process), CMM (Capability Maturity Model), SPICE, ...
- Project management
 - Feasibility study, the role in requirements engineering, ...
 - Cost estimation and COCOMO model
 - Risk analysis
 - Tracking (tools, metrics, ...)
- Methodologies of Software Project Management: RUP, Prince, ...
- Software process metrics
- Maintenance and maintenance metrics
- Advanced topics in Professional Responsibilities and Computer Ethics

For the practical exercises students will be divided into teams and would conduct an educational project for one semester. During the life of the project they would exercise skills of managing the project (negotiation with the customer, contracting, writing requirement specification, cost estimation, tracking of project progress, ...)

3.4.2. Teaching methodology

Lectures will be supported by animated, multimedia ,power-point' slides. Handouts for these slides will be delivered to students after the lecture.

We also plan to write and publish a textbook for the course, which would be a unique book in this domain in Serbian.

During practical exercises students (divided into teams) will 'simulate' the real-world process of managing the software project. The software project will be new every year and will/can be introduced through the 'simulated customer', a short problem statement, or a fully developed requirements specification. During the life of the project teams would exchange roles in order to better appreciate:

- a) the role of proper documentation throughout the life of project and
- b) the difference between managing and 'doing'.

Complete teaching material (copies of presented slides, text of practical assignments, documents produced by students groups) will be available on the web-site (*after* the presentation of certain lectures).

3.4.3. Examining methodology

Exams will be organized as follows:

- Constant review of practical work done during practical exercises (work on the project.) This will be conducted continuously during the semester.
- Short tests on theoretical aspects taught during the lectures.
- Discussion on documents and solutions produced during the work on the project.
- Oral exam covering topics taught during lectures, at the end of the semester, for the students unsatisfied with a grade acquired throughout the semester.

3.4.4. Context (link to related courses, description of the course within curriculum)

According to reforms in University education in our country, we try to improve and adjust our curriculum with the rules and proposals of Bologna declaration and to become a part of „European higher education area“.

In our curriculum, there are subjects like: „E-business“, „Software Engineering“, „Information Systems“, and „Ethical Aspects of Informatics“ to which this course closely relate to.

Yet, for the students currently enrolled, a course on „Software Project management“ is the only course aimed totally to *business, economy, sociology, and psychology* of computer science. This gives additional importance to the course, and requires that it is developed in the best possible way.

3.5. Please summarize the improvement and advantages of proposed modification:

3.5.1. Content

'Software engineering' in general and 'management of software projects' in particular are not well developed areas in Serbia and Montenegro - both in academia and industry. Subjects of „Software Project Management“ are more or less connected to other fields like: management, psychology, business, or communication skills, and so it is important to teach and practice them even at undergraduate level.

Management of software projects has direct implications to the quality of software processes and products and therefore also a direct impact to the general state of the art in (software) industry and therefore in business, economy, and administration.

Proposed modification will influence the course in a way that it will switch even more to practical (simulated) work on one of the most important business aspects of informatics – project management. Also, it will enable students of the *final* year, to practice and test their knowledge during the *last* semester of their studies, enabling them to concentrate on the real-world problem more easily after finishing their studies – which shouldn't be very far in the 8th semester.

3.5.2. Teaching methodology

Practical exercises (assignments) will be coordinated with theoretical lectures. Both lectures and assignments follow activities of a real project. Assignments will be organized as activities during the work on a real (educational) project resulting in production of appropriate documents.

This way, students will not only theoretically learn about management of software project but also learn it by actually doing the management. Division of students into teams introduces students to team-work that they will practice in real-life projects.

3.5.3. Examining methodology

The described way of examination would enable lecturers to track students' progress during students' work on the project, but also its' dedication to the continual studying of theoretical issues. Therefore the exam would last continuously during the semester motivating students to work continuously.

The mark obtained in this way is refined during the final exams at the end of semester: discussion about the project assignments and answers to theoretical questions.

That way the final mark is based on practical achievements and theoretical background and therefore is more objective and better reflects the students' knowledge and skills.

3.5.4. Target group (especially regarding the multiplier effect, i.e. are there other beneficiaries besides the attending students)

Graduate students of informatics that did not have this course. Young professionals from industry inexperienced in this field.

3.5.5. Context (link to related courses)

As already noted, the course on managing software projects would have a great direct impact to the state of the art in software industry and therefore indirect impact to the business, administration, government, education, health, and industry in general (at least to those that heavily rely on the software applications.)

At the same time, students having by the 8th semester a more or less *mathematical* background, here develop a deeper *business* knowledge, creating a much more useful software professional.

Additional importance to the course lies in the fact that it is conducted during the *last* semester of the studies, properly preparing the students for the real-life requirements.

3.5.6. Relevance of the course proposed for modification in terms of practical application (linking theory and practice, relevance for the local labor market, life-long learning, etc.)

Practical application of knowledge that should be acquired in a proposed (modified) course, will not only *link* theory and practice, but also *be* practice – as much as it is possible at the Faculty. We plan to contact local companies in Novi Sad, and involve our students into even more serious and practical work – as a part of real-life software teams. We also hope, that in a relatively „young“ country – informatics considered – our students will be of great help with combined mathematical/business knowledge.

A proposed method of grading, consisting of practical *and* theoretical work all through the semester, prepares students well for long-time (even life-long) learning, which we also consider a great benefit of the course.

Finally, but not less important, a questionnaire performed by the students during the previous school year – the first year when this course was taught – showed that student embraced this subject gladly, that they were pleased and satisfied with the chance to learn this part of informatics science. The only remark and objection was concerned with the lack of textbook, a problem which we plan to resolve through this modified course.

3.6. ECTS equivalent of this course at an EU university (how many ECTS point does this specific course get at your EU partner university or at any other EU university?)

Universidad Carlos III of Madrid, Department of Ingenieria de Sistemas y Automatica, 6 ECTS

Universita degli Studi del Sannio, Facolta de Ingegneria, 6 ECTS,

Aristotle University of Thesaloniki, Department of Informatics, 6 ECTS

3.7. Please describe the priorities of your institution as well as the importance and necessity of this project for the institutional development

In the on-going process of restructuring its curriculum along the recommendations of the Bologna Declaration, Department of Mathematics and Informatics of the University of Novi Sad is doing its best in its newly designed courses to focus on practical aspects and applications of the knowledge it offers to its students.

Since such kind of course is new, not only within the Faculty of Science, but also within the whole country, an international support and support of more experienced EU institutions would be very valuable.

In order to preserve leading position, our Department is trying to modify and improve the subject of different courses it offers to students. The lecture/discussion/practical work model of this proposal fits into this framework.

3.8. If you are also applying for the purchase of equipment

3.8.1. Explain the necessity of requested equipment for successful modification of the course

3.8.2. Describe how will the equipment be used (teaching, research,...) and who will have access to it

3.8.3. Provide photographs (with short description) of facility/facilities (laboratory, classroom,...) where the equipment will be located



3.9. Plan of activities

Please specify the schedule of planned activities (application procedure, obtaining the literature, study visit, writing and publishing the script, course implementation, etc.).

Month	Year	Activity	Explanation
October	2006	Gathering the literature, examining existing curricula in EU universities.	Purchasing books, proceedings, and papers dealing with (software) project management. In order to improve and modified existing content and teaching methodology we need to analyze similar courses at EU universities.
November	2006	Gathering the literature, examining existing curricula in EU universities.	Purchasing books, proceedings, and papers dealing with (software) project management. In order to improve and modified existing content and teaching methodology we need to analyze similar courses at EU universities and start preparation of material (book).
December	2006	Gathering the literature, examining existing curricula in EU universities. Defining skeleton of the study	Purchasing books, proceedings, and papers dealing with (software) project management. In order to improve and modified existing content and teaching methodology we need to analyze similar courses at EU universities. Based on the literature and experiences, skeleton of the study and teaching material (slides and textbook, material for exercise and practical work) and principles of practical exercises are established.
January	2007	Preparation of slides and material for textbook. Visit University of Deusto, Faculty of Engineering, Bilbao, Spain.	Based on the literature and experiences, teaching material will be further developed. Collect valuable experiences from EU colleagues. University of Deusto have a long experiences in teaching different courses in the domain in Software engineering and project management.
February	2007	Start of the course, printing first version (scripts) of textbook for internal use.	Producing of improved teaching material (slides and textbook) material for exercises and practical work. Distribute internal material for students.
March	2007	Lectures, improvements of prepared material, periodical assessment.	Producing of improved teaching material (slides and textbook) material for exercises and practical work.
April	2007	Lectures, improvements of prepared material, periodical assessment. Questionnaire.	Producing of teaching material, case-studies, and students` projects. Questionnaire will used to obtain students` opinion about quality and content of first version of book, and teaching methodology.
May	2007	Lectures, improvements of prepared material, periodical assessment	Producing of improved teaching material, tests and students` projects.

June	2007	Lectures, preparation of final version of material (book), final assessment.	Final assessment is done according modified methodology and continual assessment
July	2007	Evaluation of the course, analyzing students' opinions. Preparation of final version of book.	Evaluation starts - the one needed for the project monitoring and also the other one aimed for refining the course. Evaluation of effect of modernized course content and teaching methodology in accordance with success of students and their suggestions and opinions. As a consequence final refinement of content of book and presented material and slides based on collected experiences and lecturers general impression.
August	2007	Evaluation of the course; Repeated gathering of experiences. Printing book. Modification of slides.	
September	2007	Repeated gathering of experiences and refining the course. Preparation for next school year.	

SECTION 4: Accompanying documents (in English!)

- 4.1. Letter of commitment of the Faculty
- 4.2. Letter of commitment of the course lecturer(s)
- 4.3. Letter of commitment - producing and publishing of a script
- 4.4. CV of the course lecturer(s)
- 4.5. Letter of endorsement by an EU-university/faculty (If you are cooperating with a EU university/faculty in the frame of the proposed project)
- 4.6. Photos of the facilities (for applications which include the purchase of equipment)
- 4.7. 3 offers for the equipment (for applications which include the purchase of equipment)
- 4.8. Co-financing documentation (invoices or statements of co-financing) (for applications which include the purchase of equipment)

- **Submit any kind of documentation that might support your application!**
- **Please describe your project exactly according to the following series of questions! Omitting to fill in any of the fields or failure in submitting any of the requested documents will result in rejection the application as incomplete!**

WUS Austria, as an equal opportunity organization, strongly encourages female candidates to participate in its programs.

4.1. Letter of commitment of the faculty

It is hereby confirmed that the proposed course(s) are part(s) of the curriculum and belonging to specified semesters of the 2006/2007 academic year, as follows:

Title of the course	Name of the Lecturer	Semester 2006-2007 (winter/summer)
1. Software Project Management	Zoran Budimac	Summer
2.		
3.		
4.		
5.		

In case this CDP+ project receives the support from WUS Austria, the Faculty commits itself to ensure the implementation of the course(s) in accordance with the proposal and CDP+ guidelines.

Date: 12.12.2005.

Place: Novi Sad

Dean of the Faculty

[Stamp of the Faculty]

Chair of the Scientific Teaching Council

4.2. Letter of commitment of the course lecturer

In case this CDP+ project receives the support from WUS Austria I commit myself to strictly uphold the proposed plan of implementation. Should any other commitment conflicting with demands and schedule of this project occur during its implementation, it would not cause any delays or changes in the proposed timetable. I also commit myself to submitting all the foreseen reports, evaluations, invoices and receipts within the deadline.

Date: 12.12.2005.

Place: Novi Sad

Project coordinator/lecturer

4.3. Letter of commitment – producing and publishing of the script

In case this CDP+ project receives the support from WUS Austria, the lecturer commits himself/herself to produce a script, according to which the course will be held. Additionally, the Faculty commits itself to finance the printing and publishing of the script.

The lecturer and the faculty also commit themselves to the following:

- The script has to be produced and published before the beginning of the course.
- All students attending the course must receive a copy of the script free of charge.
- 20 copies of the script must be placed in the Faculty library.
- 2 copies of the script must be delivered to WUS Austria

Date: 12.12.2005.

Place: Novi Sad

Dean of the Faculty

[Stamp of the Faculty]

Course lecturer