

## A NEW APPROACH TO CONDUCTING EDUCATIONAL TESTS IN A WEB ENVIRONMENT

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*This paper treats a new approach to the conduction of educational tests in different subjects in a web environment. An environment for electronic management and its functions are presented. Up to now the educational tests in that kind of environment were carried out on computers with controlled IP addresses and in the presence of a lecturer. The new functions allow the students to perform their tests on any computer and without the presence of a lecturer. A comparison between the two approaches has been made.*

**Keywords:** education, web environment, tests

### 1. INTRODUCTION

There are many systems in the world for education within Internet environment. There are also a number of sites with free access, which allow the independent creation of educational courses. Such kinds of sites are some of the conditionally standardized sites [1] or the specially designed ones [2]. Another kind of site has been used as a tool for e-management of the educational process by the authors of this paper [3]. The main function of that site is oriented towards management of the educational process with the means of collecting information about the site and displaying it. Of course, the elements of the educational process itself like tests, etc. are included in the site, too.

### 2. MAIN FUNCTIONS OF THE SITE.

The site has two main zones – a common one and an administrative one. On the other hand there are two areas – a navigational one and a work one (fig. 1). The navigational area contains all links to the other parts of the site and the work one displays all other information.

The common zone contains all links to the personal directories of each participant, including lecturer's one. Each directory is divided into subdirectories depending on the kind and number of classes. There is information about the subject (summary, syllabus and references), time schedule (automatically sets the screen to the current day, shows the kind of class, its date and starting time, room and lecturer), useful links, help.

A forum is available to the students and lecturers, where they can ask questions and get answers, or exchange opinions. It is also possible to send personal messages. There are two types of educational tests that can be carried out – trial and real. Statistical data is available to all participants.

		7.30	8.30	9.30	10.30	11.30	12.30	13.45	14.45
понеделник 13.03.2006								3, 63 гр., доц. Видеков-сем.-2540	
		4, 66а гр., доц. Йорданов-лаб			4, 63 гр., доц. Расовска-лаб.				
		4, 66б гр., доц. Видеков-лаб.							
вторник 14.03.2006		7.30	8.30	9.30	10.30	11.30	12.30	13.45	14.45
		3, 67 гр., доц. Видеков-семинар-зала2540							
		4, 62а гр., доц. Йорданов-лаб			4, 65а гр., т.ас. Йорданова-лаб				
сряда 15.03.2006		7.30	8.30	9.30	10.30	11.30	12.30	13.45	14.45
		3, 62 гр., доц. Видеков-сем.-2540							
					4, 67а гр., т.ас. Йорданова-лаб			4, 68а гр., доц. Йорданов-лаб	
четвъртък 16.03.2006		7.30	8.30	9.30	10.30	11.30	12.30	13.45	14.45
		4, 62б гр., инж. Добриков-лаб			4, 65б гр., доц. Видеков-лаб.			4, 68б гр., т.ас. Йорданова-лаб	
								3, 61 гр., доц. Видеков-сем.-2540	
петък 17.03.2006		7.30	8.30	9.30	10.30	11.30	12.30	13.45	14.45
събота		7.30	8.30	9.30	10.30	11.30	12.30	13.45	14.45

Fig. 1. Class schedule (positioned automatically at the current day).

The statistical data is related to test results, reviewing of other reports, the relative standing depending on the points scored. More detailed information about the type of classes – methods of assessment, points scored (fig. 2), class attendance, etc. is displayed in other work windows.

Уважаеми студенти,

Тук ще имате възможност да направите контролно по дисциплината "Техника на повърхностни монтаж" Има

- Първият е да се упражнявате, без ограничения на броя на опитите, като използвате който и да е компютър.
- Вторият е да направите истинско контролно, като това може да стане само от определени за целта компютри, уредени от Вашия преподавател. Имате право само на един опит и то в рамките на определен ден и ч. дисциплината

Типът на контролното (упражнисие или истинско) се определя автоматично.

**Въпросите могат да имат повече от един верен отговор!**

Предстои Ви да направите упражнение върху контролно.

Старт

Старт	http://ecad.tu-sofia.bg/tpm/show-all.php?mode=1fsort-1						
№23	6032002	Мирослава Тодорова Динкелова	-	Непроведено	-	-	Непроведено
№29	PC115488	Сезен Тезджан	-	Непроведено	-	-	Непроведено

Група 4а

Потр. име	Фак. №	Име	Точки	Контролно № 1		Контролно № 2	
				Проведено на	На компютър с IP адрес	Точки	Проведено на
№1	6032230	Адриана Кирилова Георгиева	74	22.03.2006 г., 15:25:56 ч.	81.161.242.18	-	Непроведено
№2	6029950	Виктор Сашев Русев	38	22.03.2006 г., 15:45:52 ч.	81.161.242.10	-	Непроведено
№9	101205060	Елена Биждлова	52	22.03.2006 г., 15:26:32 ч.	81.161.242.16	-	Непроведено

Fig. 2.

The system is public, so there is objectivity in the assessments and comments. With the exception of personal messages and comments between the lecturers all other information is available to the registered participants. It is possible to convey anonymous inquiry, the results of which are also accessible.

The administrative zone can be accessed only by the lecturers. The full set of rights belongs to the main lecturer, who can set up the options of the site related to the kind and number of classes, number of valid students' attendances, formulae for

calculation of the marks, class topics, assignment of access right to the other lecturers (fig. 3), schedule of the classes, questions for the inquiry, etc.

Fig. 3.

The other lecturers can or cannot populate the database with questions for the self-training, templates for reports and questions related to them, deadlines for tasks and all other related data depending on their access rights.

The process of education is auditorium based. Students receive a one-time electronic key which is valid only for a specific class and a specific student group. They check-in using that key and in this way their attendance is accounted for. After the successful check-in a student gets a randomly generated question and/or report template.

### 3. THE NEW FEATURES IN VERSION 4.7.

There are two new things. The first is the ability to assess the “group discipline”, i.e. the lecturer can have information about how students attend the classes – if they go with their group and how often they are late. These elements, although not directly connected with the process of learning, are of great importance to the contemporary production. It is not necessary to convince somebody how important to one company the labour and technological discipline is, especially those with highly productive and complex technological processes. Using the system of the electronic keys the lecturer can get information about class attendance with other groups and punctuality (there are special keys which are being given to students who are late or are from other groups) – fig 4.

Собственик - ЛЮБОМИР РАНГЕЛОВ СТОЯНОВ, 62

Последно влизане: 30.05.2006, 15:34:27

Лабораторни упражнения Семинарни упражнения

Лабораторни упражнения

Упр. № 1	Упр. № 2	Упр. № 3	Упр. № 4	Упр. № 5	Упр. № 6
Технологична чистота. Почистяване на	Работа с различна температура	Селективно разтваряне на метали	Приложение на газовия разряд в производството. Параметри и влияние на налягането <i>инж. Добриков</i>	Работа с каталог. Определяне каталожни параметри. Проследяване на основни връзки. <i>гл. ас. Румен Йорданов</i>	Технологична документация – технологична скица, карта за скици. <i>доц. д-р Валентин Видеков</i>
			14.04.2006	29.03.2006	05.04.2006
			Отключване: 21.03.2006, 12:44:37	Отключване: 21.03.2006, 12:39:24	Отключване: 29.03.2006, 22:20:53

Seminar exercise No 5

Упр. № 3	Упр. № 4	Упр. № 5
Основни обработки за изготвяне на електронни възли –механична част <i>доц. д-р Валентин Видеков</i>	Вакуум. Среден свободен пробег на молекулите. Приложение на вакуума в микроелектрониката. <i>доц. Ръсовска</i>	Работно място <i>доц. д-р Валентин Видеков</i>
21.03.2006	05.04.2006	20.04.2006
Отключване: 15.03.2006, 08:47:34	Отключване: 04.04.2006, 21:28:33	Отключване: 16.04.2006, 17:04:20

Резервен 616 гр., упр.

Fig. 4.

An indicator (a yellow rectangle) showing that the student has requested an extension of the deadline for the completion of the task is visible in the field for laboratory exercise No. 4. The indicator for the spare key does not show a group, which means the key has been used by a student from the same group. This is the case when a student was late for the class and this specific kind of key was given to him/her. When a student comes with another group he/she gets a spare key generated for another group and the number of the group is displayed – seminar exercise No 5.

The analyses based on the above indications revealed that 19 % of first year students attended classes with other groups and 15 % were late.

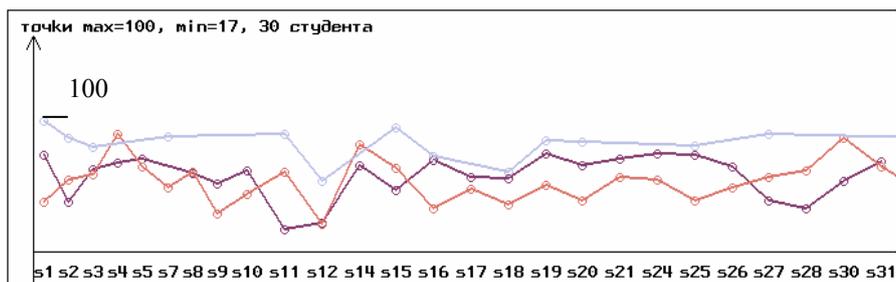
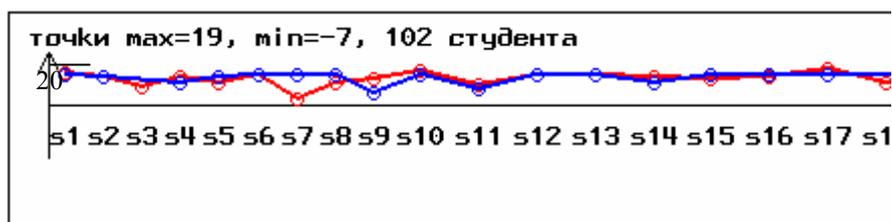
The second thing is the ability to carry out real tests without the presence of a lecturer, which has to be specifically switched on in the options (fig. 5).

In this case computers' IP addresses are being disregarded. The results of carrying out those kinds of tests reveal the following peculiarity, which at first may be considered as a danger – someone else can perform the test. It has been noticed that students were carrying out their tests jointly. On the other hand this discovers a new possibility. If the test interval is defined to be 30 minutes and the duration of each individual test is set to 15 minutes, the possibility 4 students to carry out their tests using one computer is minimal. Therefore the work group can be comprised of 2 or 3 students.

Метод на отключване на директориите:	<input checked="" type="radio"/> автоматично - преподавателят генерира ключове, които студентите ползват и сами отключват; <input type="radio"/> ръчно - преподавателят отключва директорията(ите) на всеки студент или група по отделно.		
Провеждане на контролни:	ДА	Използване на таймер за тестови контролни ДА	Провеждане на реални контролни без присъствие на преподавател, напр. от вкъщи, интернет зали и др. ДА
Брой отговори към всеки въпрос:	3		
Скала на оценките:	Минимална оценка: 2    Максимална оценка: 6		
Директория за сесийните файлове:	/tmp/prpe2-zone Много внимавайте с тази стойност, тъй като сайта може да стане неизползваем!!! Ако я промените т.е. зададената директория не може да бъде създадена, ще получите съобщение за невалидна сесия. редактирайте на ръка файла settings.php и да коригирате стойността.		
Брой символи в коментарите от форума:	300		
Период, в който	от Ден 15    Месец септември    Година 2006 <a href="#">Потребители</a> , които могат да влизат през тоя		

Fig. 5.

The summarized test results of both kinds of tests are shown in fig. 6 and fig. 7. The minimal and maximal scores and the number of tested students are automatically displayed. In order to have an exact assessment of the results it is needed to have the absolute minimal and maximal points of a specific test – 100 points for 4<sup>th</sup> year students (fig. 6.) and 20 points for 2<sup>nd</sup> year students (fig. 7).

Fig. 6. Results from controlled tests – 4<sup>th</sup> year students.Fig. 7. Results from uncontrolled tests – 2<sup>th</sup> year students.

#### 4. CONCLUSIONS.

The new functions that have been included discover new possibilities for the assessment of students' discipline regarding the regularity of their class attendance, coming on time according to the class schedule. On the other hand the distant (uncontrolled) tests make it possible for the lecturer to stress upon the team work by creating such kinds of tests, which require group activities. In a number of cases the completion of tasks on time requires concentration of the efforts of several persons,

which is achievable with the new capabilities (there are many examples of TV shows revealing group activities of the players).

The full capabilities of this kind of site can be tested freely for a period of 30 days by anybody at the demonstrational page <http://ecad.tu-sofia.bg/emdemo>.

## **5. ACKNOWLEDGMENT**

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## **6. REFERENCES**

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- [3] Videkov, V., R. Radonov, Peculiarities related to the usage of web based platforms during different semesters, Conference proceedings of the 3<sup>rd</sup> Balkan region conference on engineering education, 12 – 15 September 2005, Sibiu, Romania, pp. 25 – 27, ISBN 973-739-147-0.