Integrated e-Learning Platform for Chemical Engineering Education

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OBJECTIVES

- development of a software environment - SeLFT
- procedures delivery for SeLFT exploitation
- content delivery for the education activity
System Features

- friendly, easily adaptable and differentiated upon roles interface
- groups, roles and users together with access privileges are easy to manage
- based on MathML, SCORM, IMS standards
- structure
  - application server based on Java platform
  - a web browser type client application
- technologies used: Java Applets
System Architecture - Tiers

**Database tier**
- offers data management services

**Business tier (LOGICAL)**
- runs functional components (modules),
- users access applications via LAN or WAN.

**Thin clients tier**
- several users access same application through a multithread process
- application server runs the corresponding application
- database server provides the necessary data management services
System Architecture - Advantages

- **Extensible**: addition of new functions without disturbing the existing ones and reorganization system data.

- **Scalable**: one dimension increase $\Rightarrow$ automatic increase of remaining dimensions (compatibility)
  - horizontal (new client machines)
  - vertical (new servers)
  - database and application servers allow connection of several instances running on different machines.

- **Distributed**: uses one or several database servers
  - access restricted through the security module.
Defining main type of activities

Defining faculty organizational structure

Management of academic activities

Management of evaluation tests

Setting-up timetables for students and staff

Statistics on students' academic performances

Students periodical assessment

Access of authorized users to academic records

Educational Process Management
Educational Content Delivery

- Assisted lectures
- Non-assisted lectures
- Seminar
- Laboratory
- Evaluation and self-evaluation
Interactive Teaching

- Similar content displayed on any station
- Running interactive activities
- Permanent monitoring of students’ activity
- Good synchronization between student and academic displays
Learning and Teaching by e-Learning
Library

- designs interactive applications in other compatible formats or uses the library module ‘html’ editor
- exports applications to lessons

'supports’ the library to study allowed teaching resources
Virtual Classroom

- sets location, topic, target groups
- checks connections

launches application

virtual classroom

- 'enters' virtual classroom
- waits activity launching

surfs application
Student Refraining from Verbal Comments
Testing and Evaluation

- Test design and editing
- Support of different test-types
- On-line testing and monitorization
- Instant access to results
- Survey support
### Carnetul studentului Duta Petru
An I 1214E
Anul universitar 2004 - 2005

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**Grading Book**
e-Learning Applications for Chemical Engineering Education

Running Subjects

- Analytical Chemistry
- Basics of Chemical Engineering
- Computer Programming
- Technical Thermodynamics
- Transfer Phenomena
Conclusions

SeLFT is an integrated e-learning system for technical faculties, presenting administrative and educative functions. Complete implementation ensures better management of the teaching activity and a new, more attractive mode of imparting knowledge to students.