STEPS Erasmus+

The use of ICT solutions in Lab courses

WP3.2 Open Lecture

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Outline

- ICTs as a subject :
  - Foundation courses in Information Systems
  - Foundation courses in Management
  - Specialized courses in Food production
- ICTs as a tool to support:
  - storage of courses, lectures, exercises, tests
  - communication and cooperation
  - distance learning
    - e-learning, m-learning
    - virtual labs

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ICTs as a subject

Open Source Software for foundation courses in Information Systems

Office Applications	-LibreOffice -OpenOffice	http://el.libreoffice.org/ http://el.openoffice.org/
Math computations	-GNU Octave -SciLab	http://www.gnu.org/software/octave/ http://www.scilab.org/
Statistical Package	-GNU PSPP -R–Project	http://www.gnu.org/software/pspp/ http://www.r-project.org
DataBase Management	-LibreOffice -Base Kexi	http://el.libreoffice.org/features/base/ http://www.koffice.org/kexi/
Project Management	-OpenProj -OpenWorkbench -ProjectLibre	http://www.openproj.org/ http://www.openworkbench.org/ http://www.projectlibre.org/
Drawing & diagramming	-Dia	http://projects.gnome.org/dia/

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ICTs as a subject

Open Source Software
for foundation courses in Management

GIS	-GRASS GIS -QGIS	http://grass.osgeo.org/ http://www.qgis.org/
ERP	-Adempiere -Odoo	http://www.adempiere.org/ http://www.odoo.com
CRM	-VtigerCRM -SuiteCRM	http://sourceforge.net/projects/vtigercrm/ https://suitecrm.com/
e-commerce	-PrestaShop -WooCommerce	https://www.prestashop.com https://www.woocommerce.com
Routing optimization	-Optaplanner -Concorde	https://www.optaplanner.gr https://www.math.uwaterloo.ca/tsp/concorde.html

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Software for managerial courses

- GIS (Geographic Information System)
  - manipulates and analyzes data to present it spatially, as a 3-D map of an environment
  - **Agricultural** GIS: using Geomatics Technology enable the farmers to map and project current and future fluctuations in precipitation, temperature, crop output etc.
  - in **Supply Chain management:** GIS is used as a tool to map manufacturing, warehouse locations, clients, supplier locations and distribution centers, showing product supply or manufacturing facilities

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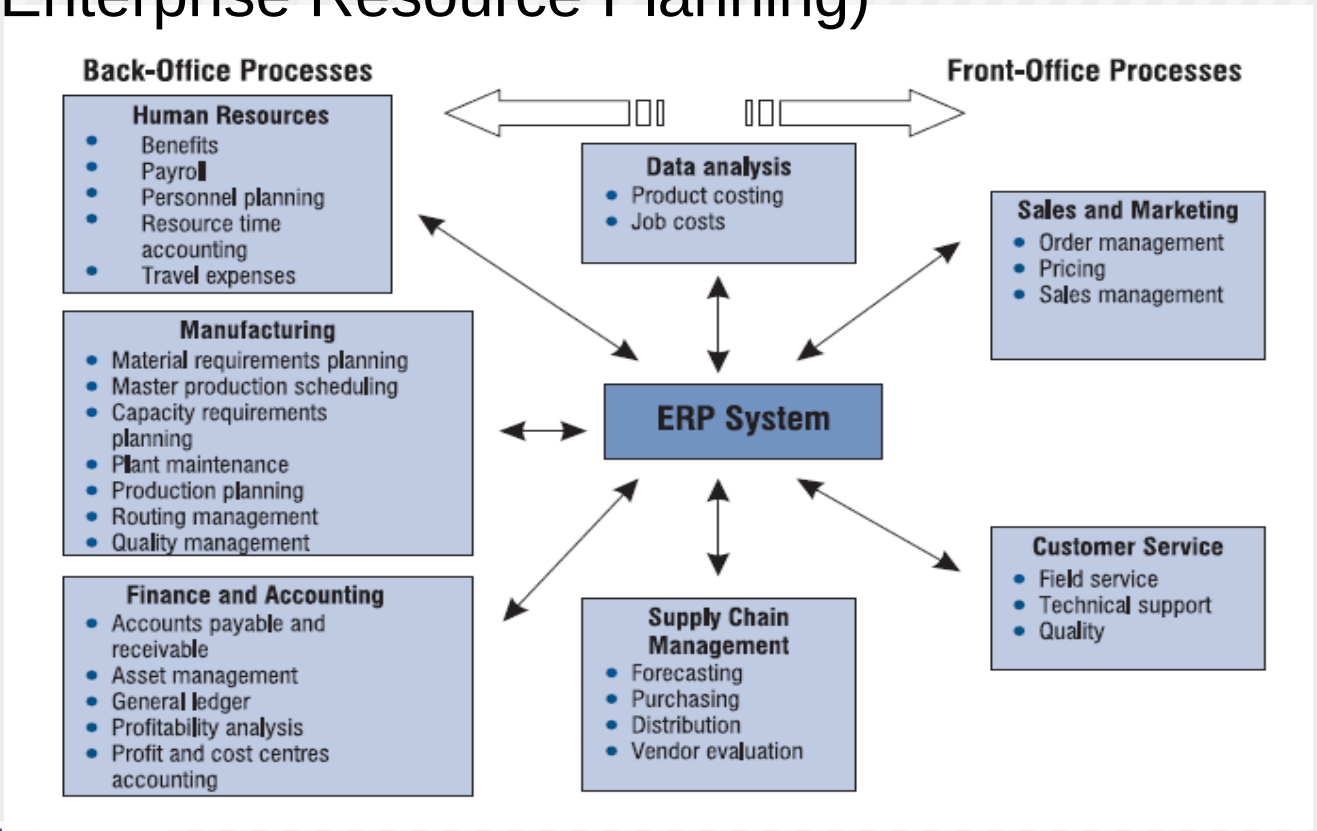
Software for managerial courses

- ERP (Enterprise Resource Planning)



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Software for managerial courses

- Routing Optimization: the process of finding the most cost-effective route
  - e.g. when delivering products to points of sales
- Useful for:
  - safe delivery of vulnerable products
  - emission control

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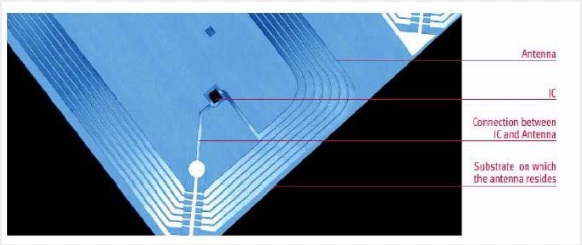
Specialized courses in food production

For example:

- Automatic Identification and Data Capture (AIDC) includes:
  - RFID labels
  - Biometrics
  - Smart cards
  - Voice and vision identification



- AIDC Applications
  - monitoring of vulnerable products
  - traceability of products throughout their life cycle
  - withdraw of products
  - personnel identification
  - animal identification

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LMS for e-learning & m-learning

- Easy administration
  - Allow efficient management of registrations, creation of groups and courses
- Centralized and Consistent Learning Content
  - One central location for easily updating and upgrading programs, courses, and support material – consistency is easy
  - Information is structured in an organised way, making it accessible to all users
- Tracking, reporting and data analytics
  - By measuring and tracking every detail throughout, we can draw insights, make adjustments and make decisions
- Improved communication and collaboration
  - A permanent open channel of communication (global or individual emails, messages, forums, wikis, video conferencing, glossaries, agenda, databases)
- Reward & Recognize Positive Behavior

https://www.wisetail.com/lms-questions/what-are-the-advantages-of-an-lms/
https://www.cae.net/lms-learning-platforms-advantages/

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for Higher Education

Popular uses in Moodle for Higher Education

Online and offline learning

Submit or grade assignments, post in forums, play SCORM packages, and more - on and offline - using the free Moodle Mobile app or Moodle Desktop.

Online exams

Set online exams using assessment tools, such as Quizzes (with setup options such as multiple choice, true/false) ready to be populated.

Single sign-on with existing systems

Educators, learners and all users can access all their online portals and systems with Moodle using just a single sign-on.

Active learning

Work and learn together in forums and wikis, encourage self reflection and peer assessment with dedicated tools, and get feedback through polls and surveys.

Online grading

Use custom grading scales and rubrics, assign different markers to assignments, manage grade moderation and control when marks are released.

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user support

- User Manuals
  - https://docs.moodle.org/36/en/Main_page
  - e.g. Course Creator Essential 2.7: http://www.howtomoodle.com/manuals/HowToMoodle_CC_Essential_2.7_manual.pdf
- Videos
  - e.g. Enrolling Learners https://www.youtube.com/watch?v=EBFilrURy2Y&list=PLxcO_MFWQBDdYwQYp5VBtOWn9xDTJV6kZ&index=28
- Discussion Forums
  - Search for solutions in discussion forums
  - https://moodle.org/mod/forum/
- User community forums
  - https://moodle.org/course/ (country community)

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Using Social Media

- Using social media in Higher Education can support:
  - more learner-centered “personalized” education,
  - self-regulated learning
  - active learning
- Social media tools
  - Blogging platforms (e.g. Wordpress)
  - Micro-blogging platforms (e.g. Twitter)
  - Wikis (e.g. PBworks) to engage students to collaborative projects for creating, editing and management of content
  - Bookmarking tools (e.g. Delicious) to organize course content
  - Video sharing (e.g. YouTube) to set up a media archive related to course content, aggregate media from several media archives and share them with peers

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Virtual laboratories

- Traditional hands-on laboratories
  - provide experimentation with “real systems”,
  - require maintenance staff, high cost equipment and materials
- Virtual laboratories
  - simulations of process models used to abstractly describe the equipment of a physical laboratory and the experimental process carried out in that laboratory

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Virtual laboratories

- Main uses of Virtual laboratories
  - as pre-lab practice before the hands-on experiments in traditional laboratory
  - as an alternative to physical lab experiments
  - as a substitute in the case of dangerous, expensive or non-practical models or systems
- in chemistry, physics, biology, etc.

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Virtual laboratories - benefits

- Cost reduction
  - physical laboratories need expensive equipment and staff
- Increased availability
  - can be used from any place at any time
- Increased accessibility
  - can be accessed from people who might not be able to travel to physical laboratory premises
- Improved safety
  - dangerous materials or sensitive equipment can be handled without (health or damage) hazards

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Thank you

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