

TUWEL - das Lernmanagementsystem der TU Wien

Moodle Anpassungen und Erweiterungen zur Abbildung innovativer Lehr- und Lernprozesse

TUWEL – the learning management system of the Vienna University of Technology - adaptations, enhancements and extensions of Moodle to meet teaching and learning needs of the future

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Abstract: *This paper gives an introduction to the enhancements of the Learning Management System TUWEL of Vienna University of Technology, which facilitates Moodle as its core. The system is being used since 2005 – starting with 1.000 users and growing to 28.000 by February 2010 – to support and enhance learning and teaching at the university. It has been under active development, providing additional functionalities like automatic course visibility by course startdate, new mycourses overview sorted by semester and coursestartdate, checkmark assignment type, assignment filetype filter and filename checker and external server assignment type. Some of the enhancements are available at tracker.moodle.org.*

Keywords: *enhancement, development, MOODLE*

1 Introduction

TUWEL is the Learning Management System of Vienna University of Technology, which facilitates Moodle as its core. We present features and enhancements implemented according to the requirements and feature requests of the university's teachers, students and organizational staff.

2 Interface between TUWEL and TUWIS++

An interface between TUWEL and TUWIS++ (the Information System of Vienna University of Technology) providing a fully digital workflow from course creation and participant management to grading and certification has been implemented. Authentication is provided by a proprietary Single-Sign-On Portal integrated into Moodle by a dedicated authentication plugin. Course enrollment information, group status and course start date is passed from TUWIS++ to Moodle and grading results are passed back to TUWIS++ for a seamless digital workflow.

3 Automatic synchronisation

Automatic synchronization between the course start date and the visibility of courses is performed by a daily cron script. Teachers now don't have to bother updating the course visibility at the beginning of the term. This solution removed a source of regular organizational problems for hundreds of students.

/etc/crontab

```
20 0 * * * apache curl URL://startdate_visibility.php?password=secret > /dev/null 2>&1  
startdate_visibility.php
```

4 Course sorting overview

The new course sorting overview gives the administrator the possibility to choose a different front page layout for students, course creators, teachers etc. The courses will be sorted according to the start date set within the course settings.

Additionally we adapted the enhancements for the MyMoodle page, created by Berlin Humboldt University in Berlin. With this enhancement your courses on your MyMoodle site will also be sorted according to the start date. Additionally highlighting of due dates has been added.

The screenshot shows the 'Overview of my courses' page in MyMoodle. The page is sorted by start date. The top course is '186.172 Algorithmen und Datenstrukturen 1 (VL 4,0) 2010S'. Below it are '188.391 Objektorientierte Modellierung (VU 2,0) 2010S' and '187.272 Gesellschaftswissenschaftliche Grundlagen der Informatik (VU 2,0) 2009W'. The bottom course is '188.139 u. 188.140 Algorithmen, Datenstrukturen und Programmieren 1 VO+UE 2009W'. The page includes a sidebar with 'My Menu', 'TUWEL Toolbox', and 'RSS Feeds'. The main content area shows course details, assignments, and forums. The right sidebar contains a 'Welcome' message, a 'Calendar' for April 2010, 'Messages', and 'Online Users'.

Figure 1 MyMoodle sorted according to start date.

5 Extension of the assignment module

This extension includes the file name convention creator, file type checker, a print view of all submissions and a zip & download feature for all submitted assignments.

Upload a single file

Allow resubmitting ?

Email alerts to teachers ?

Maximum size

File types allowed for upload (,)

Set standard filename ?

Figure 2 File name converter and file type checker

The file type checker ensures that only the specified types of files, defined by a list of allowed extensions e.g. “jpg,zip,tar.gz”, can be uploaded. The file name convention – set standard filename - provides fields for creating unique “speaking” filenames.

6 Enhanced scheduler module

The scheduler module enhanced with additional features contains an improved time-slot enrolment visualization, enrolment and un-enrolment deadline setting options and a print view possibility of all time-slots with corresponding data.

My Appointment: Dienstag, 26 Februar 2008 10:30 - 11:00 , Meeting with your Katarzyna Potocka, Location: HS 5 Unsubscribe slot ?

Slots

Date	Start	End	Choice	Member of Staff	Group Session	Attended	Location	Notes
Montag, 25 Februar 2008	10:00	10:30	<input type="radio"/>	Katarzyna Potocka	Free places: 3		HS 5	
	10:30	11:00	<input type="radio"/>	Katarzyna Potocka	Free places: 3		HS 5	
Dienstag, 26 Februar 2008	10:00	10:30	<input type="radio"/>	Katarzyna Potocka	Free places: 3		HS 5	
	10:30	11:00	<input checked="" type="radio"/>	Katarzyna Potocka	Free places: 2 Katarzyna-Anna Potocka	No	HS 5	
Donnerstag, 28 Februar 2008	10:00	10:30	<input type="radio"/>	Katarzyna Potocka	Free places: 3		HS 5	
	10:30	11:00	<input type="radio"/>	Katarzyna Potocka	Free places: 3		HS 5	

?"/>

Figure 3 File name converter and file type checker

7 Checkmark assignment

The checkmark assignment is a new assignment type to facilitate a very popular exercise mode at the Vienna University of Technology. Students have to solve up to ten (calculation-) exercises per week. They submit information on which exercises they

were able to solve and are randomly asked to present these at the next face-to-face session, receiving or losing credits. Each examples can have an individual name and score. Grades can be calculated automatically for all or for all not yet graded assignments, saving teachers a lot of calculation work.

Checkmark * Hide Advanced

Allow resubmitting No

Email alerts to teachers No

Number of examples

Number of first example

Individual grading/naming* activate individual function

Individual naming (,)*

Individual grading (,)*

Figure 4 Checkmark assignment – settings

TUWIEN TUWEL

188.391 Objektorientierte Modellierung (VU 2,0) 2009S

TUWEL > 188.391 OOM SS09 > Assignments > DI-KreuzerIn Übungsblatt 6 > Submissions Update this Assignment

Separate groups All participants See all course grades

First name: All ABCDEFGHIJKLMNOPQRSTUVWXYZ
Surname: All ABCDEFGHIJKLMNOPQRSTUVWXYZ

Page: (Previous) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 ...24 (Next)

First name / Surname	Matrikelnr	Grade/Max	Comment	Last modified (Student/in)	Last modified (LVA-Leiter/in)	Status	Final grade
		6 / 6		Examples: 31, 32, 33, 34, 35, 36 Donnerstag, 4 Juni 2009, 03:52	Dienstag, 9 Juni 2009, 12:47	Update	6.00
		6 / 6		Examples: 31, 32, 33, 34, 35, 36 Dienstag, 9 Juni 2009, 07:42	Dienstag, 9 Juni 2009, 12:58	Update	6.00
		5 / 6		Examples: 31, 32, 33, 34, 35 Dienstag, 2 Juni 2009, 03:49	Dienstag, 9 Juni 2009, 12:58	Update	5.00

Page: (Previous) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 ...24 (Next)

print view XML Output

Calculate not graded Calculate all grades

Submissions shown per page 3

Allow quick grading

Save preferences

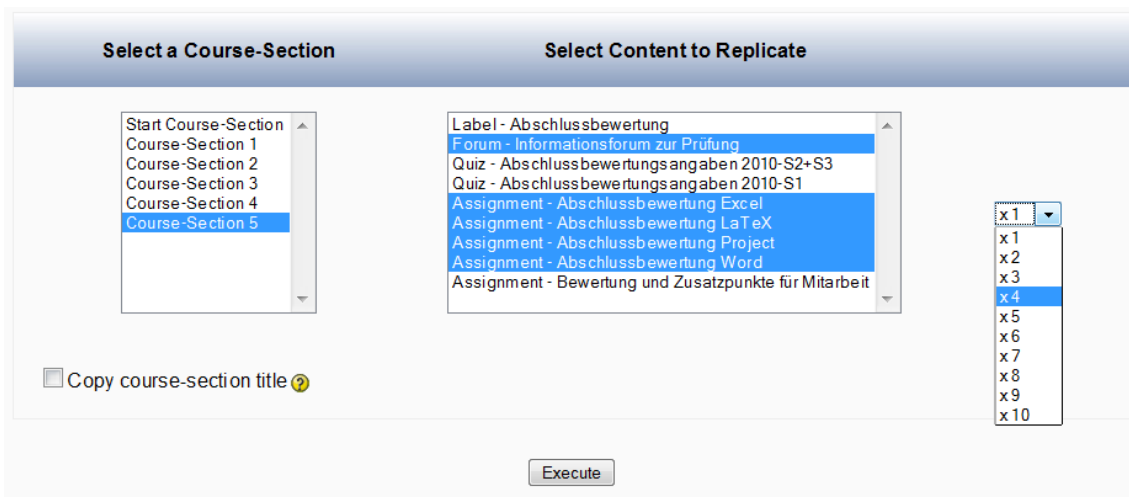
Figure 5 Checkmark assignment – grading

8 Upload grading files

Many teachers use short face-to-face interviews to verify the origin of the uploaded assignments or use other presence events in addition to the online upload. It is also very popular to use a spreadsheet application for grading especially when offline. The implementation of the possibility to upload a grading file within the online assignment has been a urgent request right from the start of the services. The content of the grading file is integrated directly into the grading of the specified assignment. A template grading file with all user data (Name, Group, ID-number) is provided for download making user identification quick and easy. This enhancement is mostly used for non-online activities like laboratory work or practical / outdoor exercises.

9 Element replication

For a faster and easier creation of a course structure, the element replication makes it possible to copy already created elements. Teachers can choose elements (e.g. forum, assignments) they want to replicate and decide how often they should reappear within your course. The new elements only need minor editing saving teachers a lot of generally needed time for parameter setup.



The screenshot shows the 'Element replication' interface in Moodle. It is divided into two main sections: 'Select a Course-Section' and 'Select Content to Replicate'. In the 'Select a Course-Section' section, a list of course sections is shown, with 'Course-Section 5' selected. Below this list is a checkbox labeled 'Copy course-section title' with a help icon. In the 'Select Content to Replicate' section, a list of content items is shown, including 'Label - Abschlussbewertung', 'Forum - Informationsforum zur Prüfung', 'Quiz - Abschlussbewertungsangaben 2010-S2+S3', 'Quiz - Abschlussbewertungsangaben 2010-S1', 'Assignment - Abschlussbewertung Excel', 'Assignment - Abschlussbewertung LaTeX', 'Assignment - Abschlussbewertung Project', 'Assignment - Abschlussbewertung Word', and 'Assignment - Bewertung und Zusatzpunkte für Mitarbeit'. To the right of this list is a dropdown menu for the number of repetitions, currently set to 'x 1', with options ranging from 'x 1' to 'x 10'. At the bottom center of the interface is an 'Execute' button.

Figure 6 Element replication

10 External Server Assignment

Many Institutes have developed specialized utilities for checking assignments e.g. automatic XML syntax parsing or semiautomatic test-suites for java applications.

These utilities can now use the “external server assignment type” as an interface to Moodle. Moodle provides user authentication and access control via roles, hence the external server application can focus on its core task. Additionally the load generated by checking the uploads is generated on the external server and not on the Moodle system, avoiding performance issues.

The assignment sends the uploaded file to the assignment file space and simultaneously via curl to the external server. An iframe provides interaction in the remote external server. Check results can be passed back to the assignment and grading module.

Abgabe 1

Deadline: 2010-05-17 13:00:00

Hinweis! Da es vor allem am Tag der Abgabe zu einer starken Belastung des Servers kommt, ist es nicht möglich ihnen sofort eine Rückmeldung des Systems garantieren zu können. Um noch garantiert eine Auswertung ihrer Abgabe vor der Deadline zu erhalten und somit noch eine weitere Abgabe vor der Deadline möglich ist, müssen sie bis spätestens 2010-05-17 01:00:00 abgeben

Ihre letzte Abgabe war positiv!

Allgemeine Informationen	Informationen zu den Instanzen	Abgabe #(id)	Sourcecode	Output	Bewertung	Abgabezeit
abgabeid 10088	Instanz # 0000 0001	1 (id:10077)	Sourcecode	StandardOutput	Positive Abgabe!	2010-04-26 21:26:43
		2 (id:10088)	Sourcecode	StandardOutput	Positive Abgabe!	2010-04-27 21:00:30

Figure 7 External server assignment

PHP template code is provided for the external server side component, but can be implemented in any server technology providing http communication.

11 Further information

Some enhancements are available for download at

<http://tracker.moodle.org/secure/IssueNavigator.jspa?reset=true&query=hruska+potocka&description=true&body=true>.

For further information feel free to contact us.



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