

Requirements for the Course Management System

Introduction

This document specifies the requirements for a Course Management System (CMS). The requirements are grouped by their stakeholders, and functional and non-functional requirements are separated.

Stakeholders

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| S | Students |
| L | Lecturers |
| B | Administration |
| M | System maintainer |

General requirements

Some requirements are shared by all stakeholders.

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| R1 | The system shall provide <i>static course information</i> | |
| R2 | The system shall be able to store <i>static course information</i> | |
| R3 | The system shall be able to represent <i>static course information</i> | |
| R4 | The system shall provide <i>dynamic course information</i> | |
| R5 | The system shall be able to store <i>dynamic course information</i> | |
| R6 | The system shall be able to represent <i>dynamic course information</i> | |
| R7 | The system shall provide a messaging system | |

Requirements of Students

Functional requirements

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| R8 | The system shall enable students to retrieve contact information of students and lecturers of subscribed courses | |
| R9 | The system shall provide the history of a course (view contents of a course over the years) | |

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| R10 | The system shall provide the history of attended courses | |
| R11 | The system shall enable students to subscribe/unsubscribe to courses | |
| R12 | The system shall enable students to subscribe/unsubscribe to exams | |
| R13 | The system shall be able to provide a collaboration environment in a course (so students can share files and notes within a team) | |
| R14 | The system shall be able to let students submit textual content | |
| R15 | The system shall be able to let students upload files | |
| R16 | The System shall allow sending messages to individuals, teams or all course participants at once | |
| R17 | The system shall allow students to create teams. | |
| R18 | Teams are created by students inviting other students in the same course using the messaging system. | |
| R19 | The system shall facilitate searches in all <i>static information</i> of courses. | |
| R20 | The system shall facilitate searches within all <i>dynamic information</i> and files in a course | |
| R21 | The system shall allow students to edit their personal information | |
| R22 | The system shall allow students to change their password | |
| R23 | The system shall provide a password reset function, which resets the password and mails it to the user | |
| R24 | The system shall notify students of events (posted news messages, team invites and scheduled exams) | |
| R25 | The system shall allow students to customize the notification behaviour | |
| R26 | The system shall allow students to view course grade statistics per semester | |

Non-functional requirements

Privacy

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| R27 | The system shall protect the user's privacy | |
| R28 | The system shall prevent students from viewing grades of others | |
| R29 | The system shall provide a user-customizable visibility policy for the <i>personal</i> | |

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| | <i>information</i> | |
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Availability

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| R30 | The system shall have high availability | |
| R31 | The system shall not have unexpected downtime | |
| R32 | The system shall have downtime at most 4 hours/month | |
| R33 | The system shall have its expected downtime announced at least 48 hours in advance | |
| R34 | The system shall have downtime only during low-intensity hours | |

User friendliness

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| R35 | The system will be user friendly | |
| R36 | The system shall have bilingual support (Dutch and English) | |
| R37 | The system shall have a maximum of 3 clicks to reach any content | |
| R38 | The system shall have a single login to access all content | |
| R39 | The system shall have a consistent UI (in all the views and dialogs, the UI elements behave and are placed in a similar way) | |
| R40 | The system shall have a UI which is intuitive (the behaviour of the system is according to the intuition of a standard end user) | |
| R41 | The system shall have a descriptive UI (all UI elements should have a descriptive text) | |

Accessibility

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| R42 | The system shall have high accessibility | |
| R43 | The system shall be accessible by disabled (blind) users, who should be able to navigate the system and have access to all content and functionality | |

Security

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| R44 | The system will be secure | |
| R45 | The system shall allow only students to change <i>study information</i> of others | |

Interoperability

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| R46 | The system shall be highly interoperable | |
| R47 | The system shall provide an export to commonly used calendar formats (allowing users to import scheduled lectures into a personal calendar) | |

Requirements of Lecturers

Functional requirements

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| R48 | The system shall allow lecturers to create courses | |
| R49 | The system shall allow lecturers to create entirely new courses | |
| R50 | The system shall allow lecturers to recreate a course (copied from a previous period) | |
| R51 | The system shall allow lecturers to register <i>assistant lecturers</i> | |
| R52 | The system shall allow lecturers to prepare lecture schedules (roster) | |
| R53 | The system shall allow lecturers to upload course material for lectures | |
| R54 | The system shall enable lecturers to <i>manage grades</i> (insert, update, calculate final grade) | |
| R55 | The system shall allow lecturers to specify and change the grading policy (weights of grades, determining when a student passes the course) | |
| R56 | The system shall enable lecturers to mail multiple students at once | |
| R57 | The system shall support the use of mail merge templates, to customize mass mailings (example: "Dear [Firstname], your grade is: [grade]"). | |
| R58 | The system shall provide a "one-click" function which will mail all students of the course their grades (no template should be entered or altered) | |
| R59 | The system shall allow lecturers to manage <i>static course information</i> | |
| R60 | The system shall allow lecturers to limit the number of students subscribing to a course | |
| R61 | The system shall allow lecturers to specify enrolment policies based on grade, first-come first-serve (fcfs), and department | |
| R62 | The system shall allow lecturers to specify enrolment policies based on grade | |

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| R63 | The system shall allow lecturers to specify enrolment policies based on first-come first-serve | |
| R64 | The system shall allow lecturers to specify enrolment policies based on department | |
| R65 | The system shall prevent students from subscribing to a course they don't qualify for (not completing required courses, or not from the right department(s)) | |
| R66 | The system shall allow lecturers to view all <i>personal information</i> (including pictures) of people in the system | |
| R67 | The system shall enable lecturers to plan meetings with students or student teams | |
| R68 | The system shall allow lecturers to <i>manage dynamic course information</i> | |
| R69 | The system shall allow lecturers to post news messages | |
| R70 | The system shall allow lecturers to <i>manage</i> the archive | |
| R71 | The system shall allow lecturers to set the visibility of archived items (enabling them to gradually expose content to students) | |
| R72 | The system shall allow only lecturers to <i>manage</i> student teams | |
| R73 | The system shall allow lecturers to enter grades for teams (so each team member will get that grade) | |
| R74 | The system shall allow only lecturers to create new teams | |
| R75 | The system shall allow lecturers to insert students into teams | |
| R76 | The system shall allow lecturers to remove students from teams | |
| R77 | The system shall allow lecturers to delete teams | |
| R78 | The system shall allow lecturers to assign (<i>assistant</i>) <i>lecturers</i> to teams | |
| R79 | The system shall allow lecturers to name and rename teams | |
| R80 | The system shall provide grade statistics (averages, standard deviation, per department, per year) | |
| R81 | The system shall enable lecturers to compare grade statistics with other courses | |

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| R82 | The system shall allow lecturers to duplicate courses and import materials from other courses into another course, but only from their own courses | |
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Security

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| R83 | The system shall allow lecturers to view the <i>dynamic course information</i> of courses given by other lecturers | |
| R84 | The system shall allow lecturers to <i>manage</i> the dynamic content visibility (visible for students and lecturers, visible for lecturers, visible to self only) | |
| R85 | The system shall allow students to view only their own grade | |
| R86 | The system shall allow lecturers to view all grades of all students in the course | |

Interoperability

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| R87 | The system shall be able to import BOZ roster information into the course roster | |
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Non-functional requirements

Availability

See Students.

User friendliness

See Students.

Accessibility

See Students.

Requirements of Maintainer

Functional requirements

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| R88 | The system shall allow maintainers to create back-ups of the entire system | |
| R89 | The system shall allow maintainers to restore partial and complete back-ups of a specific date | |
| R90 | The system shall allow maintainers to limit the size of files being uploaded by lecturers and by students | |
| R91 | The system shall allow maintainers to limit the total available space for specific courses | |

Non-functional requirements

Extensibility / evolvability

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| R92 | The system shall be easily extensible and evolvable | |
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Testability

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| R93 | The system shall be easily testable | |
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Scalability

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| R94 | The system shall be scalable | |
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Maintainability

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| R95 | The system shall be easily maintainable | |
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Interoperability

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| R96 | The system shall be interoperable with secondary university systems | |
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Requirements of the Administration

Functional requirements

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| R97 | The system shall allow only the administration to <i>manage</i> courses | |
| R98 | The system shall allow only the administration to create new courses | |
| R99 | The system shall allow only the administration to delete courses | |
| R100 | The system shall allow only the administration to update <i>static course information</i> | |
| R101 | The system shall allow only the administration to appoint (principal) lecturers to courses | |
| R102 | The system shall allow only the administration to specify the minimum number of students for a course. If there are too little subscriptions in a semester, that course will not be given during that semester. | |
| R103 | The system shall have no maximum limit for the number of course participants ever | |
| R104 | The system shall allow only the administration to specify the course prerequisites for students | |
| R105 | The system shall allow only the administration to specify completed courses as prerequisites of a course | |
| R106 | The system shall allow only the administration to specify the department as prerequisite of a course | |
| R107 | The system shall allow the administration to retrieve all <i>study and personal information</i> of students | |
| R108 | The system shall allow the administration to retrieve all lecturer information | |
| R109 | The system shall allow the administration to enter lecturer information | |
| R110 | The system shall allow the administration to calculate grade statistics | |
| R111 | The system shall allow the administration to calculate grade statistics per year | |
| R112 | The system shall allow the administration to calculate grade statistics per student | |
| R113 | The system shall allow the administration to calculate grade statistics per course | |

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| R114 | The system shall allow the administration to calculate grade statistics per department | |
| R115 | The system shall allow the administration to calculate grade statistics using combinations of the possibilities mentioned above | |
| R116 | The system shall allow the administration to calculate the number of passed students per chair per time-period | |
| R117 | The system shall allow the administration to evaluate courses through students by means of a web-survey | |
| R118 | The system shall allow the administration to manually subscribe students to courses, bypassing requirements and enrolment policies | |
| R119 | The system shall not allow users to change information which is contained and maintained by secondary university systems | |
| R120 | The system shall automatically synchronize with secondary university systems | |

Non-functional requirements

Availability

See Students.

User friendliness

See Students.

Interoperability

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|-------------|--|--|
| R121 | The system shall be interoperable with <i>secondary university systems</i> | |
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Extensibility

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| R122 | The system shall allow the administration to make exceptions with regard to student enrolment to courses | |
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Glossary

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| Personal Information: Information about a person, such as name, address, a picture, interests, etc. |
| Study Information: Information about a person's study progress, such as subscribed courses, grades and exam attempts. |
| Assistant Lecturers: Lecturers who assist the principal lecturer for a course. |
| Static Course Information: Information of a course which does not change while a course is given, but between semesters. This includes the lecturer, amount of ects and study material. |
| Dynamic Course Information: Information of a course which changes while a course is given. This includes news messages, archived files and roster. |
| Secondary University Systems: All university systems which are shared by different departments, such as a central address book containing all kinds of personal information |
| Manage: Managing involves the creation, reading, updating and deleting. |