

SW REQUIREMENTS AND SYSTEM DESIGN

Core Module and Functionalities

Author	Checked by	Description
Marjan Gusev		Initial idea and drafting of e-Students information system
Ivan Chorbev	Marjan Gusev	Initial functional requirements for Students information system
Dejan Gjorgjevikj	Marjan Gusev	Initial Functional Requirements for Student Enrolment System
Ana Madevska Bogdanova	Marjan Gusev	Initial Functional Requirements for Student Services and LMS
Anastas Misev	Marjan Gusev	Initial Functional Requirements for Student Identification and Accounting System
Ljupcho Antovski	Marjan Gusev	Initial Functional Requirements for Reporting
Goce Armenski	Marjan Gusev	Initial Functional Requirements for eAssessment Management System
Toni Stojanovski	Marjan Gusev	e-Enrolment Software Design
Gjorgji Manceski	Marjan Gusev	Introduction and User interface descriptions
Sime Arsenovski	Marjan Gusev	Business rules and User interface descriptions

CIRCULATION LIST

This document is intended only for participants of i-Know Project.

REVISIONS SUMMARY

Revision	Date	Author	Modified paragraphs and kind of modification
Draft.2.2	03/01/2011	Marjan Gusev	Template for working groups
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This document is prepared in the scope of the Innovation and Knowledge Management towards eStudent Information System TEMPUS Project JPGR 511342 – iKnow.

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1 (CMF) Core module and functions

(SCH) Module for study programs and schedules

- Defining student programs, courses, prerequisites and rules for studies
- Mapping of faculty staff to courses
- Equivalence of courses, modules and programs
- Schedule – mapping groups, rooms and teachers

(SAM) Student activities module

- Enrolment in a semester and selection of courses
- Forming groups

(ADM) Module for the administration

- Administration of faculties and accredited study programs
- Administration of members of the faculty
- Administration of classrooms, rooms and laboratories

(ACR) Module for administration of academic results

- Administration of courses taken
- Completing semesters
- Administration of exams
- Administration of earned ECTS credits and grades from exams passed

The system should cover all the features arising from the unique basis of the organization and implementation of study programs and mode according to the European Credit Transfer System. The system should also cover the functionalities arising from the established bases for organizing and implementation of mobility of the students from one university to another unit or from one to another high education institution in the country and abroad.


The system should allow flexible definition of the content and rules of studying. This means that the universities should be able independently (without intervention in the source code) to define data for the exams, the rules and criteria of studying, ways of financing and so on.

The system should cover all periods of study at university level. There are three cycles of studies:

- The first cycle of study – Undergraduate
- Second cycle of study - Postgraduate Studies
- Third Cycle studies - PhD studies.

1.1 Referenced documents

Ref.	Title	Document Id.	Edition
[1]	Закон за високото образование, „Службен весник на Република Македонија”, број 35, 14 март 2008		
[2]	КОНКУРС за запишување студенти на прв циклус студии на студиските програми на Универзитетот „Св. Кирил и Методиј“ во учебната 2010/11 година		
[3]	КОНКУРС за запишување студенти на втор циклус студии на студиските програми на Универзитетот „Св. Кирил и Методиј“ во учебната 2010/2011 година		

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Ref.	Title	Document Id.	Edition
[4]	ДОПОЛНИТЕЛЕН КОНКУРС за запишување студенти на додипломски студии на студиските програми на Универзитетот „Св. Кирил и Методиј“ во учебната 2010/11 година		
[5]	Latest proposed changes of the Law for Higher Education		
[6]	Best practice: Croatian National AAI service for education: http://www.aaiedu.hr/		
[7]	GEANT Identity federations: https://md.feide.no/identity_federations/		
[8]	Europass CV web site		
[9]	European Credit Transfer and Accumulation System (ECTS) Site		
[10]	Правилник за студирање по КС на ПМФ		
[11]	Diploma Supplement		
[12]	Statute of UKIM, UKLO, UGD, SEEU.		

1.2 Objective

The core module of the university information system should automate several very important business processes of the university. The system should organize student data, employees, study programs, various data about the educational process and the faculty's research and scientific work. The system should automate the work of the student services, manage study programs and active courses offered, follow the entire course of studies for each student, the student's semesters, courses, exams, human resources management at the university, schedule of lectures, management of student payments on various grounds, distribution of resources (professors and classrooms), organization of online services for the students and various other activities.

The integrated information system for the university ought to achieve numerous enhancements:


- Fast and efficient administration
- Quality of the services provided to the students
- Engagement of the faculty staff in administering the data and information
- Accurate and updated data for the University and the faculties
- High quality, continuous and instant access to the faculty and university data.

1.3 General Overview

All rules related to the business logic should easily be defined without changes to the application (for instance min/max number of ECTS credits).

Every change made in the system by the users should be recorded – logged. The log can later be used to see who, when and from where made changes in the database. The system should have an intuitive user interface where a simple procedure with the fewest steps possible will enable completing the required tasks.

The user interface – the use of all components of the system by the: faculty members, associates, students and potential students should be only through a WEB interface. The WEB should use modern technologies that will bring fast response with small burden on the server by doing most of the validation process on the client side. All user forms should have fast access to on-line help, context dependent. The components used by the system

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administrator or office users can be implemented as standalone desktop applications or WEB applications. Additional possibilities for an additional web interface for small devices (mobile phones) should be planned.

1.4 Scope

The aim of the proposed system is to automate the entire system of student programs, courses, the relationships among courses, courses with programs, mapping of teachers with courses, equivalence of courses. The process of studying, enrolment of students in semesters, enlisting in courses, exams passed, ECTS credits earned should all be automatically managed online. Members of faculty, classrooms, laboratories and all resources should be administered with this module. The data used by the system is to be stored in a database. A web-based application is to be provided for the various users that will enable them to administer their small portion of the entire system, with high regard of hierarchy of decision making, data access control and flow of data and processes. Each user can access its portion of the system allowing for distributed, but accurately located responsibility, quick update of data and timely access to completed results. This will enable the process to be simplified and considerably quickened, making the jobs of the people involved, especially the university staff and admission officers easier and faster. The ultimate acceleration will be at the students end, enabling online access and management of their activities, obligations and usual steps a student makes during studies. The system should be able to support the current process, but is meant to centralize it and make possible for the processes to go faster, easier and more accurate. The system should enable the future extension to almost fully paperless management as soon as laws allow it.

1.5 Existing System(s)

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Comment [I1]: Every participant of the project can fill a block here (SEE, UGD remaining)

1.5.1 FON University

FON University has the following systems:

- System for student affairs
- ERP system
- System for class attendance
- Enrollment system
- Learning Management System

All of these systems are working independently because all of them are from various vendors. In this moment their integration is based on exports from one system to another.

Student Services


The system for student affairs is web-based system with a lot of bugs and lacks of functionalities. The main issue is its incompatibility with a financial system; so many issues are solved manually. Decision of the management is definitive replacement of this system. A new system is in a development phase, so many business rules in this project, proposed by FON University are appropriate to the new system.

ERP

The ERP system that is installed at FON University is complete solution provided from one of the leading software vendors in the region, so it is bug-free system and the new system for student affairs is built up on top of this system.

Attendance

A system for class attendance is Soyol based solution with pair of card readers set on each classroom. On top of this solution there is a web based solution for reporting about

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attendance of teachers and number of students. This should be upgraded to be integrated with class schedules and student files for reporting needed for ECTS implementation.

The enrollment system is basic web-based system for collecting information about the candidates, and later to provide a complete ranking list for each enrollment cycle which is edited manually. The export from this system is used to fill the student files in the system for student affairs.

Learning Management System

The platform for Learning Management System is Moodle. It is system which will be kept as LMS system on the university, and it is expected that this project will bring integration of the system for student affairs with this LMS.

1.5.2 Existing systems in UKIM

UKIM is the oldest and most heterogeneous university in the Republic of Macedonia. That is the source of most of the problems in the processes of its centralization and the aim of building an integrated information system for it. For a very long time faculties that are members of UKIM have developed different process rules for most of the student and faculty activities. Furthermore, fundamental differences exist among the areas taught starting from technical sciences, social science, art, architecture, music, medicine, physical education... just to name a few. However, uniting factors like the implementation of ECTS and equal legal obligations should be the starting point when building an integrated information system. Certain adaptations to common business processes should be undertaken by members of the university for the system to be applicable everywhere. The system should be versatile and robust to accommodate the needs and processes existing in every faculty member of UKIM. In the process of deployment of the Information system, members from each faculty should test, configure and accept the final common software solution. The process of importing legacy data from all faculties in the system should also be undertaken and the integrated information system should provide the means to import legacy data from older existing systems.

1.5.3 Existing systems in EURM

Registration of a semester

Students first complete paper application and deliver it to an administrative officer. After that the administrative officer checks the application and verifies it in the electronic system, but this part is linked with the financial department. If the student hasn't paid all fees related to semester registration, the system will automatically inform the administrative officer that the student is not eligible to register. If all the fees are covered by the student, then he/she will be qualified to register the semester.

Disadvantages:

- No electronic registration of semester.
- Deans and other responsible personal (professors, assistants etc.) cannot see any reports with the registered students.

Registration of courses


Current system doesn't provide any services related with registration of courses.

Registration of elective subjects

The registration of electives goes in old-fashioned way. The student needs to fill out a form, and chose one or more of the electives. After that administrative officer collects all forms and prepares a list of students for all electives. Then the list is delivered to the dean.

Disadvantages:

- No electronic registration of electives
- The system has no mechanism to identify what each student has chosen.

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- Professors cannot see any electronic list of students who chose their subjects.

Class schedule

Current system doesn't provide any services related with class scheduling. Class schedule is attached to separated systems like: Electronic Notice Board and Moodle.

Pro-active customized notification

Current system doesn't provide any pro-active customized notifications.

Administration of completed courses and ECTS

After completing the process of registration exam, administrative officer collect applications and submit them to the professor. After finishing the exam the professor is obligated to enter all grades in the application forms and then return them in student office, in a period of 7 days. Administrative officer verifies the application forms and grades into the system. If any mistakes have happened the administrative officer can make changes.

Disadvantages:

- Professors have no access to the electronic system, so he cannot be sure that the administrative officer correctly put the grades into the system. The only way to check is through personal contact with the Student Administration Office, and asks them to provide him with the list of grades for the particular course.
- Current electronic system is not compatible with ECTS.

Reporting

Current system provides reach set of reports, but the main problem is that professors don't have any access to the system.

1.5.4 Existing systems in UKLO

First, students fill different paper applications and submit it to the Administrative office (Student's affairs). The officer checks the applications submitted and verifies in the electronic system. It's the same for the student's scholarship payments, exam payments, semester payments and etc... The Students affairs are not linked with the financial department. It means that this department has not the real-time information about student payments. It is important these two departments to be linked and student can access through web site to have an overview of all necessary payments, calculation of amounts and view all necessary bank accounts and examples of completed orders.

Also, there is no electronic registrations of semester, applications for exam, electronic registrations of courses, and etc. There is no automatic calculation for the acquired credits and checking accomplishment of the conditions for taking a particular exam. The system should provide an opportunity for updating data items (type of subject, title, number of classes, credits, professor, etc.). In this way base is formed from which educational programs for years and guidance will be created.

When the process of registration exam is completed, the administrative officer collects applications and submits them to the professors. When the test ends, the professors enter all grades into the applications form and return them to the Administrative office, and the administrative officer verify them into the system. There is a possibility for mistakes, and the professors have no access for that kind of imported data and cannot be sure that the grades are correctly stored in the system. The only way to see how the grades are entered in the existed system is to ask the officer to print a list of entered grades.

Current existing system is not compatible with ECTS.

1.6 Benefits

The aim of the proposed system is to address the limitations of the current systems existing in different universities or faculties members of universities. The requirements for the system

have been gathered from the defects recorded in the past and also based on the feedback from users. Following are the objectives of the proposed system:

- Online access to system modules and distribution of work and responsibilities to students, faculty staff, clerks and university management.
- Reducing time in activities. Reduce the time to update courses and programs, reduce the time and effort it takes for a student to enrol in a semester or enlist in a course, reduce the time for application to an exam or the time for the exam results to be updated.
- Centralized data handling. Transfer data smoothly to all departments involved and handle the data in a centralized way. Organise reliable backups. Enable fast and timely access to accurate and updated data.
- Paperless management of processes with severely reduced manpower. Reduce the manpower needed to perform all the student studies tasks by reducing the paper works needed and by distributing responsibilities.
- Cost cutting. Reduce the cost involved in the business process included.
- Operational efficiency. Improve the operational efficiency by improving the quality of the process.

1.7 Goals

The main goal of the system is to automate the process carried out in the organization with improved performance and realize the vision of paperless management of studies. Some of the goals of the system are listed below:


- Manage large number of student details.
- Create student accounts and maintain student's data in an effective way
- View all the details of the students.
- Create statistical reports.
- Enable the students and faculty staff members to take proactive role in the process by entering their portion of data in the system
- Provide the students and faculty staff with updates of the data they are interested in and entitled to access.

1.8 Users


The software should enable creation of users and user groups through its user interface. For every new user created, the administrator of the software should be able to specify the forms and modules within forms that the created user can access and work with, with various levels of user permissions. All activities are tracked and stored. The following users and groups are to be initially created:

ID	User groups	Roles
IT AD	IT Administrator	<ul style="list-style-type: none"> Performs regular maintenance of software applications, servers. Manages backups of databases, Upgrades hardware / software. Create and manage user accounts for other user groups Manages all setup data, configurations Manage the student and staff accounts using standard LDAP schemas Enable and revoke privileges Maintain and monitor the infrastructure Provide hosting for the AAI services for institution with smaller members Maintain the users/resource database (LDAP and associated servicer) Maintain the identities of the users (identity providers)
AD	Administrator	<ul style="list-style-type: none"> Create and manage user accounts for other user groups Create and manage courses, study programs, connections among courses and programs, revisions of study programs Update and manage global information stored in the system (for instance changes in faculty staff, cities, countries, municipalities) Manage the student and staff accounts using standard LDAP schemas Enable and revoke privileges
HS S	Head of the student service	<ul style="list-style-type: none"> Create and manage courses, study programs, connections among courses and programs, revisions of study programs Overview reporting (subset) Receive notifications for special requests made by students online and confirm/deny requests. Manually modify data for a student in special circumstances (late enrolment, special quota, various special cases) Analyses statuses and response times Analyses quality of service provided Joins faculty with courses Creates semesters exam sessions Views and analyze reports and data Analyses statuses and response times Analyses quality of service provided Issues reports to the University management Issues reports to media / Ministry of Education Monitor and supervise the process carried out by Faculty / Study program Work in the office for communications with students Provide administrative services for students Manage students data Coordinate work with faculty members and provide services
AC	Administrative	Be able to manually perform all activities that students can do through the

ID	User groups	Roles
SS	clerk of the student service	<p>online system. Manually modify data for a student in special circumstances (late enrolment, special quota, various special cases)</p> <p>Be able to perform some of the activities that faculty staff users can do through the system (enter grades for students exams, export lists with exam candidates)</p> <p>Generate reports (subset)</p> <p>Generate notifications to students, faculty staff etc.</p> <p>Generate and print documents upon students requests</p> <p>Joins faculty with courses</p> <p>Creates semesters, exams sessions</p> <p>Views and analyze reports and data</p> <p>Analyses statuses and response times</p> <p>Analyses quality of service provided</p> <p>Issues reports to the University management</p> <p>Issues reports to media / Ministry of Education</p> <p>Monitor and supervise the process carried out by Faculty / Study program</p> <p>Work in the office for communications with students</p> <p>Provide administrative services for students</p> <p>Manage students data</p> <p>Coordinate work with faculty members and provide services</p>
AC DF	Administrative clerk of the department of financing	<p>Generate reports with financial implications (for both students and faculty – visiting lecturers, honorary payments of additional activities)</p> <p>Monitor student payments</p>
EC TS	ECTS coordinator	<p>Create and manage courses, study programs, connections among courses and programs, revisions of study programs</p> <p>Generate reports (subset)</p>
R	Rector	Generate reports (subset)
UM	University Manager	Generate reports (subset)
AV R	Academic Vice-Rector	<p>Generate reports (subset)</p> <p>Analyses statuses and response times</p> <p>Analyses quality of service provided</p>
AV D	Academic Vice-Dean	<p>Generate reports (subset)</p> <p>Make decisions on high level student requests for special cases submitted online</p> <p>Analyses statuses and response times</p> <p>Analyses quality of service provided</p>
D	Dean	Generate reports (subset)
FF O	Faculty Financial Officer	<p>Generate reports with financial implications</p> <p>Make decisions on high level student requests for special cases submitted online</p>
P	Professor	<p>Access resources using single credentials</p> <p>Authenticate and authorize in home and visiting institutions (mobility)</p> <p>Teaches</p> <p>Updates results from exams in the system</p> <p>Provides data in the system about exams</p>

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ID	User groups	Roles
		Views reports for student enrolment in courses and attendance Update other data (diploma thesis results etc.) Create and manage courses Create and organize sections in every course Create and manage assessment questions and possible answers Views and analyze results Analyses learning statuses and response times Analyses quality of service provided Issues reports to the University management
TA	Teaching Assistant	Access resources using single credentials Authenticate and authorize in home and visiting institutions (mobility) Provides data in the system about exams Views reports for student enrolment in courses and attendance Update other data (diploma thesis results etc.) Manage courses (subset of parameters)
StT	Student Tutor	Access resources using single credentials Provides data in the system about exams (Grades for laboratory activities of students, etc)
ST	Students	Access various resources using single credentials Be identified for presence at lectures using RFID Sign up semesters Authenticate and authorize in home and visiting institutions (mobility) Apply for exams in the system Enlist for courses View their current status Submit seminar thesis, diploma thesis etc. Registers to the system Inputs personal details, fills application Fills details from his/her certificates (academic scores) Submits / prints application/ reports/diploma/ certificates Views FQA View results and progress Take assessment, Check results, Change personal information, Communicate with other students
ME	Ministry of Education	View various statistical reports for applied / admitted candidates or students
SO	State Statistical Office	View various statistical reports for applied / admitted candidates or students
LC	Library Clerk	View reports of active students to import to library information systems Import data for students owing books to the university
PG	Parent/Guardian	View reports for a student and his progress in the studies
SP	Scholarship Provider	View reports for a student and his progress in the studies
E	Evaluator	View reports (subset)

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ID	User groups	Roles
AC M	Accreditation committee member	View reports (subset)

1.9 Functionalities

Basic functionalities of the Core module are specified as follows:

ID	Functionality	Description	Objective	Module	Users
[1]	Administration of students data	Enable administration or only preview of the students personal data. Data needed for reports, statistics, contacts and guidance during studies.	Insert/edit students personal and background data. Students can preview part of their data and update some of the information themselves.	CM	Office members / Students
[2]	Administration of students enrolment details	Enable administration of the parameters of a student at the time of enrolment (initial program, tuition size etc.)	Manage and maintain information for the details for the beginning of the studies of the student	CM	Office members
[3]	Administration of the student semesters	Sign in new semesters for the student in question, change programs, tuition group – amount. Close completed semesters	Keep track of the progress the student makes during the years and manage his/hers current status/program/tuition.	CM	Office members / Students
[4]	Administration of students courses	Enter the student's choices for elective and mandatory courses for the signed semester in question. Calculate credits for the semester based on the courses chosen.	Manage the courses the student ought to attend in the semester. Control of overall credits earned during the semester. Implement control mechanisms for repetition of failed exams. Change of elective students.	CM	Office members / Students
[5]	Administration of student exam applications	Enter student exam applications or manage student exam applications entered online.	Manage student's applications to pass exams. Students can apply for exams by themselves. Officers can make changes in the applications if	CM	Office members / Students



ID	Functionality	Description	Objective	Module	Users
			needed		
[6]	Administration of student's exams	Insert or update grades achieved by the student on a particular exam. Review list of exams passed.	Manage student's exams.	CM	Office members / Faculty
[7]	Administration of seminar thesis	Insert or update details of the seminar thesis undertaken by the student	Manage student's seminar thesis.	CM	Office members / Students
[8]	Administration of diploma thesis	Update details for the diploma thesis that the student works on	Manage diploma thesis	CM	Office members / Students
[9]	Administration of exam sessions	Add new exam sessions when exams are scheduled	Manage exam sessions	CM	Office members
[10]	Administration of semesters	Create new semesters with appropriate list of activated courses eligible for taking. Join courses with professors for the semester in question	Manage semester details	CM	Office members
[11]	Administration of quotas and tuition prices	Inserting and updating tuition details for various quotas that students can enroll in, costs for different programs and quotas.	Manage costs for studying		Office members
[12]	Administration of courses in programs	Make relations between programs and courses that can be taken in the program in question	Manage distribution of courses in program	CM	Office members
[13]	Administration of courses	Insert or update details for each course, ECTS credits, fall/spring semester, number of classes	Manage details for the courses	CM	Office members
[14]	Administration of programs	Insert/update details for the study program that a student can enroll in (start year, bachelor/master/PhD level etc).	Manage program	CM	Office members
[15]	Administration of program revisions	Insert revisions of program	Manage revisions of program	CM	Office members
[16]	Administration of members of the faculty	Insert new employees, update details for the current employees / faculty members	Manage faculty members	CM	Office members
[17]	Diploma thesis report	Present a list of completed ongoing diploma thesis work	Review diploma thesis	Reports	Office members
[18]	Exams report	Present results from exams with various filtering options	Review exam results	Reports	Office members / Students / Faculty



ID	Functionality	Description	Objective	Module	Users
[19]	Graduated report	Present list of graduated students	Review graduated students and various statistics	Reports	Office members
[20]	Elective courses report	Present a list of students per course per semester	Review students taking a particular course	Reports	Office members / Faculty
[21]	Master book	Prepare the report for printing the master book requested by the ministry of education	Exact columns and details as requested by the ministry for all active and graduated students	CM	Office members
[22]	List students per program	Present list of students with various filtering options	Review students per program, per semester, per year etc	Reports	Office members
[23]	Seminar thesis report	Present list of seminar thesis	Review seminar thesis	Reports	Office members
[24]	Administration of student mobility	Insert / update details for student exchange programs the student has participated in.	Manage student mobility	Students	Office members / Students
[25]	Administration of Master thesis	Update details on the Master thesis the student is working on	Manage the student's master thesis	Students	Office members / Students
[26]	Issuing documents	Issuing various documents for the student (list of courses and grades, proof of enrolment, etc)	Easy generation of requested documents	Students	Office members / Students
[27]	Issuing news and announcements	Post news and announcement or mail bulk mails to students	Manage communication with students	Students	Office members
[28]	Administration of financial services	Create and manage various services with financial implications	Set prices for services	General data	Administrator
[29]	Administration of lookup data	Administration of cities, countries, municipalities and other general data used in various modules in the system	Manage lookup tables	General data	Administrator / Office members
[30]	Administration of class schedule	Management of classes, rooms and groups of students	Overview of taken rooms	General Data	Students/Teachers/Office members
[31]	Administration of faculties	Administration of the faculties in the university	Manage faculties	General data	Administrator
[32]	Administration of student sign outs	Administration of the students leaving the university	Manage the students that left the studies	Students	Student/Office members

1.9.1 Administration of students data

This functionality is accessible to the backend officers in the student services as well as the student himself/herself. The office clerk can change/update all the parameters, while the student can only update contact information, and read the remaining information. Most of the data is automatically imported when the student is enrolled at the university from the enrolment module, and changes are rare later during studies.

If the system entered a temporary identification number for foreigners, the system automatically displays fields for entering the passport number and date of expiry of passport and address of temporary residence.

The system should provide sequential generation and allocation of index numbers respectively within the university. The system will not allow regeneration and allocation of existing index number for two students.

1.9.2 Administration of students enrolment details

The parameters for the student at the time of enrolment should automatically be imported after they have officially enrolled, from the enrolment module. However certain corrections and updates might be necessary, so after the data is imported, a form should be accessible for corrections for these parameters for each student. The form should be accessible for editing by the clerk at the student services department, and in read only form to the students themselves as well as other interested parties (vice-dean or enrolment commission members).

1.9.3 Administration of the student semesters


Whenever a semester starts, the students should sign in for the following semester. That is the point when changes in programs are made or when the student can change tuition group (for example move from state sponsored to a private quota due to multiple repetitions of major courses). Finished semesters are also marked in this module. The form is accessible to students or to clerks in the student services department. Students can update most of the data, but confirmation for program or quota changes are necessary from clerks or vice-deans. When students demand irregular sign ups (changes in study program or quota), an automatic request is posted to the clerks with a notification to confirm or deny the request. Also, the students are served predefined parameters when signing up according to their enrolment choice and ranks, as well as previous semesters. If changes are imposed due to the student's style of studies (repetition of courses over the defined maximum), the system serves the implied changes in the quota to the student when he/she accesses the module to sign in the following semester. When the student applies to start a new semester, the system retrieves information from the library module about the books borrowed by the student. If the student holds books borrowed for longer than a year, the student is not allowed to start the new semester until he/she returns those books.

A student can request for a semester off from the Faculty Administration if he/she has eligible reasons (medical reasons, travelling, etc) that has to be approved by the Faculty authority (Vice Dean ...). There are no fees for that semester. In the students e-index there is mark that he/she is inactive for that semester. During the period, the student is not allowed to take any exams. If the student holds books borrowed for longer than a year, the student is not allowed to take the semester off until he/she returns those books.

The system should notify the Head of Student Affairs for students who have not regulated the status 15 days (or other configurable number) after the deadline for regulating the academic year. The system will notify about students who have not verified semester after the deadline for validation of the semester.

The system should allow for defining different modes of study (part time, full time).

The module calculates the cost of the semester, and requests from a web service from the financial department if the student has completed payment or has money on his/hers account. The module updates information to the financial department via a web service that the semester has been signed, and money should be deduced from the student's account.

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1.9.4 Administration of students courses

When the students signs in a new semester, he/she should also enlist in courses for the semester in question. This module serves for the student to enter choices for elective and mandatory courses for the semester. The module calculates credits for the semester based on the courses chosen. The module should implement control mechanisms for repetition of failed mandatory exams. Also the module serves the student only courses that he/she is eligible for (part of the student's study program; beware of connections with previous prerequisite courses). The module implies repetition of previously failed mandatory courses. Control of overall credits earned during the semester is to be implemented. Confirmation from a clerk after being automatically notified is necessary for irregular choice of courses made by the student (exceeding maximum number of credits per semester, changes in elective courses that the student has failed the previous semester, or other irregularities). The module can be accessed by clerks for special cases when the student is unable to complete the job or when changes after deadlines are necessary. According to the courses enlisted, and credits earned, the appropriate sum for payment for the semester is calculated based on the quota group of the student. The system will not allow taking courses unless semester is enrolled. The module updates information to the financial department via a web service that courses have been chosen, and money should be deduced from the student's account. The web service response from the Finance department should confirm the activity.

1.9.5 Administration of student exam applications

In a limited predefined time interval before the exam session the students can access the module and enlist for exams. The list of exams is limited to the courses taken by the student in the current and previous semester. Clerks can change exam applications in special cases.

If the student is not satisfied with the resulting grade for a course, it is possible to reverse and the test can be re-taken. For cancellation of an already passed exam, the student must submit an online application for annulment of the examination through the system. The system will not allow taking exams or partial exams unless a semester is enrolled. The system stores data for both partial and complete exams. The module updates information to the financial department via a web service that exams have been applied, and money should be deduced from the student's account. The web service response from the Finance department should confirm the activity.

1.9.6 Administration of student's exams


After the exam has passed, the results from the exams, the grade the student has received can be updated through this module by the teacher of the course in question, or by the clerk in student services for all exams. A module for bulk insert of grades for all students per exam per exam session will also be implemented. This module is also accessible by clerks or by the teachers covering the exam in question. Except for entering grades in the list of students applied for the exam presented, an option for uploading a predefined Excel list template of students and grades should also be implemented.

1.9.7 Administration of seminar thesis

When seminar theses are due for some courses, the student can apply for a thesis in this module. The notified selected teacher can confirm the thesis and after the student submits the final version, the teacher can update the grades and the status of the thesis. Clerks in the student services can also perform the same tasks if necessary. The module updates information to the financial department via a web service that a seminar thesis has been applied for, and money should be deduced from the student's account. The web service response from the Finance department should confirm the activity.

1.9.8 Administration of diploma thesis

The student can apply for a diploma thesis in this module. The notified selected teacher can confirm the thesis and after the student submits the final version, the teacher can update the

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grades and the status of the diploma thesis. Clerks in the student services can also perform the same tasks if necessary. Before the diploma thesis is completed and the student finishes his/hers studies, the system retrieves information from the library module for the books borrowed by the student. The student must not have any books borrowed at the time of diploma thesis presentation. The module updates information to the financial department via a web service that a diploma thesis has been applied for, and money should be deduced from the student's account. The web service response from the Finance department should confirm the activity.

1.9.9 Administration of exam sessions

Regular and irregular exam sessions can be scheduled along with particular exams schedules in this module. Clerks at the student services in coordination with the vice-deans should update data in the module.

1.9.10 Administration of semesters

Each new semester could be created as a copy of the previous fall/spring semester. However certain changes are always possible (activation/deactivation of a course, change of the teacher for a course). This module serves to create new semesters with appropriate list of activated courses eligible for taking. It allows joining courses with professors for the semester in question. Copying previous semesters makes for quicker work, but changes should also be easy to make.

1.9.11 Administration of quotas and tuition prices

This module serves for inserting and updating tuition details for various quotas that students can enroll in. Costs for different study programs and quotas can vary from year to year, so new values for each year can be updated. The student pays the costs effective the year he/she started studying.

1.9.12 Administration of courses in programs

Each course can be mandatory or elective in different study programs. Also, each course can be taken in different year of study in different programs, and have different prerequisites. The relations between programs and courses that can be taken in the program in question are managed in this module.

1.9.13 Administration of courses

This module serves for inserting or update details for each course that is taught in the faculty / university. Parameters like ECTS credits, fall/spring semester for the course, number of classes per week can be updated here. Clerks update data, as well as teachers for the particular course.

1.9.14 Administration of programs


Sometimes new study programs are introduced, so they are managed through this module. Parameters like name, start year, bachelor/master/PhD level, revision of the program, etc are updated.

1.9.15 Administration of programs revisions

Manage revisions of study programs. Each program belongs to a revision in the programs.

1.9.16 Administration of members of the faculty

The module serves for management of the employees (members of faculty). New employees are inserted, and details for current employees / faculty members can be updated. Parameters like status, education can be updated.

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1.9.17 Diploma thesis report

This module provides listings of diploma thesis by various filters (by professor, by course, by year, time interval, diploma thesis status etc). With this listing the teachers can overview their diploma thesis.

1.9.18 Exams report

This module provides listings of exam applications by students by various filters (by professor, by course, by year, time interval etc). With this listing the teachers can overview the students have applied for an exam.

1.9.19 Graduated report

This module provides listings of graduated students by various filters.

1.9.20 Elective courses report

This module provides listings of students by various filters (by professor, by course). With this listing the teachers can overview the students have applied to follow his/hers course.

1.9.21 Master book

This module provides printing the master book of enrolled students requested by the ministry of education. The system should generate and update main registers for each faculty. Types of main registers for each faculty are the following:

- Registry of enrolled students at the first cycle of studies
- Registry of enrolled students of second cycle studies
- Registry of enrolled students at the third cycle
- Registry for graduates of first cycle studies
- Registry for graduates of second cycle studies
- Registry for graduates of the third cycle

1.9.22 List students per program

This module provides listings of students by various filters, mainly the study program they have enrolled in.

1.9.23 Seminar thesis report


This module provides listings of seminar thesis by various filters (by professor, by course, by year, time interval, seminar thesis status etc). With this listing the teachers can overview their seminar thesis.

1.9.24 Administration of student mobility

The system should allow easy updating of data for the student who wants to be switched from one study program to another, in the frame of unit at the University. The student should apply for the implementation of mobility and appropriate documentation to transfer from one to another study program. This means that the student can complete the form on the Internet and can immediately print. The document stands and ID. If the student needs to pay, is paid to the respective ID. The application must be submitted in the office of Student Affairs. Approval of the request or notice due to incomplete documentation or failure must be transferred via e-mail notification.

Student logs through the Web site of the faculty. Also, there is and other options of submitting an application for transfer from one to another study program.

Equivalence of subject - will be used for migration from in the faculty from one to another program. In the future it would be good to can afford this on the university level.

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Equivalence of subjects covers which subject of which organizational unit or study year covers wholly or partially any other subject. This equivalence provides students transferring from one program to another study program in the same or other faculty in the organizational units of the faculty.

For students who are enrolled from other faculties, the equivalence should be created with recognition of subjects or the appropriate number of credits from some subject of a specific form in which all subjects are shown for the respective study program.

The other subjects that will not find equivalence are treated as optional.

All documentation for the student mobility is an integral part of the student's file.

According to the Law on Higher Education is made possible mobility of students from one unit of a University or another higher education institution in the country and abroad.

The officer of Administrative office shall publish international exchange programs for students, or on the basis of bilateral agreements between universities. There is a need of opportunity to announce and compatibly between academic programs and courses.

The system should allow easy updating of data for the student who wants and is transferred from one to another higher education institution in the country and abroad. The student should submit a request and appropriate documentation to transfer from one to another higher education institution.

1.9.25 Administration of Master thesis


The student can apply for a master thesis in this module. The notified selected teacher can confirm the thesis and after the student submits the final version, the teacher can update the status of the master thesis. Other authorities (faculty secretary) must confirm the status update after completion. Clerks in the student services can also perform the same tasks if necessary. Before the master thesis is completed and the student finishes his/hers studies, the system retrieves information from the library module for the books borrowed by the student. The student must not have any books borrowed at the time of master thesis presentation. The module updates information to the financial department via a web service that a master thesis has been applied for, and money should be deduced from the student's account. The web service response from the Finance department should confirm the activity.

1.9.26 Issuing documents

In the course of study, students need documents issued to confirm their status. The system will automatically provide the issue on the basis of data on students entered in the system. The form and content of the certificates should to comply with the prescribed form. Templates for the certificates should be integrated in the system. The templates of the documents should be changeable by system administrators without interventions in the source code by the supplier of the software. The student can login and request one of the certificates online, for the certificate to be prepared in advance. The student can later pick up the certificate from the student services department, or have it delivered by mail. All services are paid for by the student. The system should print the certificates for passed exams and graduate students under the templates provided by the Ministry of Education and given in the official Gazette. 35/08, 103/08 and 26/09. Templates should be editable. The module updates information to the financial department via a web service that the student has applied for a certificate, and money should be deduced from the student's account. The web service response from the Finance department should confirm the activity.

Certificate for passed exams

In the course of study, students need this kind of certificates to compete for scholarships, credits, student homes and so on. The certificate lists all the exams passed by the student, and some small amount of personal details for the student, among other things. The detailed template must be changeable and customizable per faculty.

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Certificate for completion of studies

After passing all the exams, and the presentation of diploma thesis (if applicable), at the request of the student, the Office of Student Affairs issues transcripts and certificate that the student graduated. The certificate lists all the exams passed by the student, and some small amount of personal details for the student, among other things. The detailed template must be changeable and customizable per faculty.

Sign out document

For the student who wants to transfer to another educational institution, at his/hers request, a sign out document is issued. The certificate lists all the exams passed by the student, and some small amount of personal details for the student, among other things. The detailed template must be changeable and customizable per faculty.

1.9.27 Issuing news and announcements

This module serves for sending notifications, news and announcements to students and members of faculty. The authorized user can select a subset of students and/or members of faculty, write a message and send it. Each authorized user can only select a subset according to his/hers authorization (teachers can send messages to students taking their courses, vice deans to students at their faculty etc). The filters for subsets of students are various (by course, by start year, by study program, by name, by schedule group etc.). The messages will primarily be e-mails, but an SMS module should also be developed.

The system should also support notifications and alerts defined for various events that are automatically triggered and sent.

1.9.28 Administration of financial services

This module serves for defining new and updating old services that imply financial consequences for the students. The financial services can have fixed cost for all students or can be different for different study programs or for different start years of study. Also costs can be different for different quotas for students. The module servers to calculate the amount the student should pay when requesting a service from the university. Also the module should retrieve data from a web service from the financial department to check whether the student has paid the wanted amount. Only if the student has completed the financial commitments expected, this module can allow for the service to be provided for the student. Examples of services include, but are not limited to:

- issuing certificates,
- fixed fee for enrolment in a semester,
- applying for a diploma thesis,
- applying for a master thesis,
- applying for a PhD thesis,
- applying for an exam outside the predefined time period,
- applying for a seminar thesis,
- library membership,
- Tuition
- Costs per year
- Uniforms
- Kimono
- Seminars
- Project assignments
- Colloquia
 - with penalty
 - regular

- Exams
 - In regular session
 - In penalty session
- Portable computer
- Differential exams
- Certificates
- Specialist labour

etc.

The system should allow definition of new services and related services. The system should allow the definition of models of payments (packages). The system should enable the allocation of services and models of paying to students. The system must allow the granting of defined services for a student. The system must send information to the financial system for each service performed for one student. The system must receive information from the financial system of any change of the balance of a student

1.9.29 Administration of lookup data

Master database tables containing cities, countries, high schools, municipalities, types of employment, types of education etc should be managed through this module. There should be forms for inserting new records and editing previous. Control for preventing insertion of existing records should be implemented.

1.9.30 Administration of class schedule

This module should enable inserting the already generated classes schedule in the system. The module serves as source of information for faculty members as to what classroom is available or taken, when in need of organizing additional meetings with students. Also students and teachers will get informed of their schedule during the semester through this module. There should be views of the schedule by class group, by classroom and by teacher.

1.9.31 Administration of faculties

The module serves for management of the faculties within the university. New faculties are inserted, and details for current faculties can be updated. Parameters like name, address etc.

1.9.32 Administration of sign outs

The module serves for the students to request for complete leaving of the university, withdrawal of all original documents (diplomas of previous education) etc. A document for the exams passed and status at the time of sign-out is issued. The student's status is updated to "signed out". Students cannot sign out if they have borrowed books from the library. This module requests confirmation via web services from the library module for any remaining books borrowed by the student. The module updates information to the financial department via a web service that the student has applied for a sign out, and money should be deducted from the student's account. The web service response from the Finance department should confirm the activity.

1.9.33 Other reports

The system will generate the following reports:

- Report for a list of candidates and students by high schools where they come from
- Report for a list of candidates and students by cities where they come from
- Report on the age structure of candidates and students
- Report for teachers who do not return the reports back to the Student Affairs
- Report for insured and uninsured students in a particular academic year
- Report on average passed exams in session, the faculty, university

- Report applicants and students by ethnicity
- Report the number of students with particular status
- Reports per time dimensions
- How much and how many passed the exam
- Report students who did not passed some exam
- Report on the number of students per grade received
- Report on the number of students who applied for exam
- Report the number of students who attend the exam previously applied by subject, by faculty, by generation
- Report the number of students who attend the colloquium previously applied by subject, by faculty, by generation
- Report for students with their average grade in some average range at certain moment

The system should calculate an average:

- By passed exams in session
- By subject, for certain academic year
- By faculty, by professor
- By subject, by professor
- By professor

The system should provide an export of all views in excel or pdf format, with feature for further editing.

The system should generate history for a student which will cover information about a student in given time period by the following categories:

- Exam
 - Subject
 - Session
 - Academic year
 - Order number of exam
 - Date of application for exam
 - Date of attendance of exam
 - Date of passing
 - Date of cancelation
 - Date of repetitions of an exam
 - Professor
- Colloquium
 - Subject
 - Order number of colloquium
 - Semester
 - Academic year
 - Date of application for colloquium
 - Date of attendance of colloquium
 - Date of passing
 - Professor
- Semester
 - Which semester
 - Order number of semester



- Academic year
- Date of accomplishment
- Date of verification
- Diploma
 - Title of diploma
 - Date of application
 - Date of delivery
 - Professor
 - Commission members
- Master thesis
 - Title of the thesis
 - Date of application
 - Date of delivery
 - Professor
 - Commission

1.10 UML Diagrams

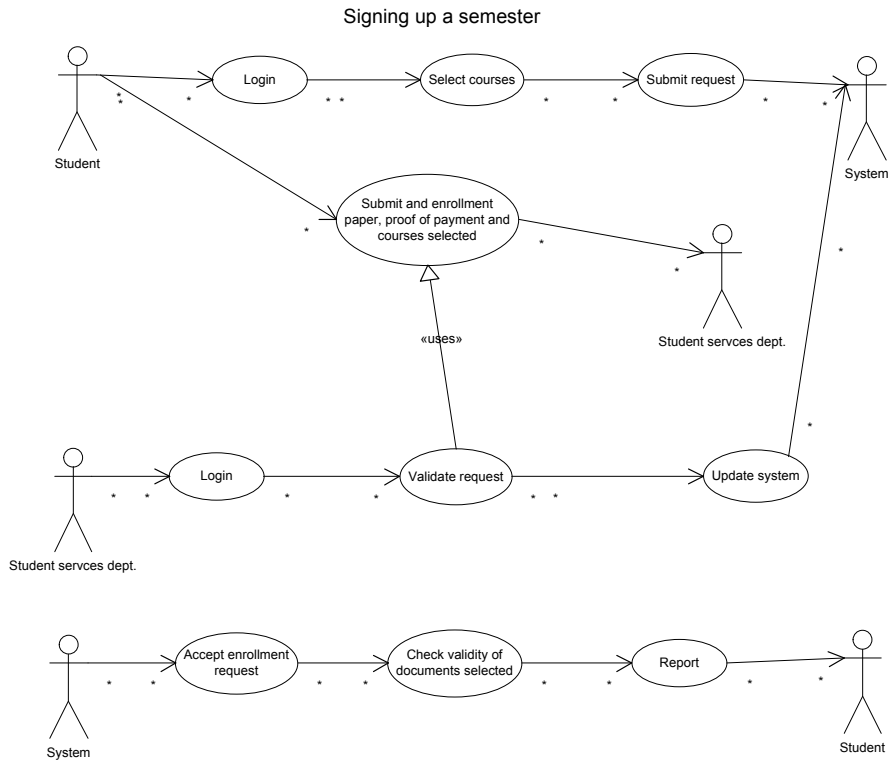
In this sections we give several diagram which aim to depict the functional requirements for the software solution.

Following Use Case diagram depicts the use cases which need to be supported by the software solution.

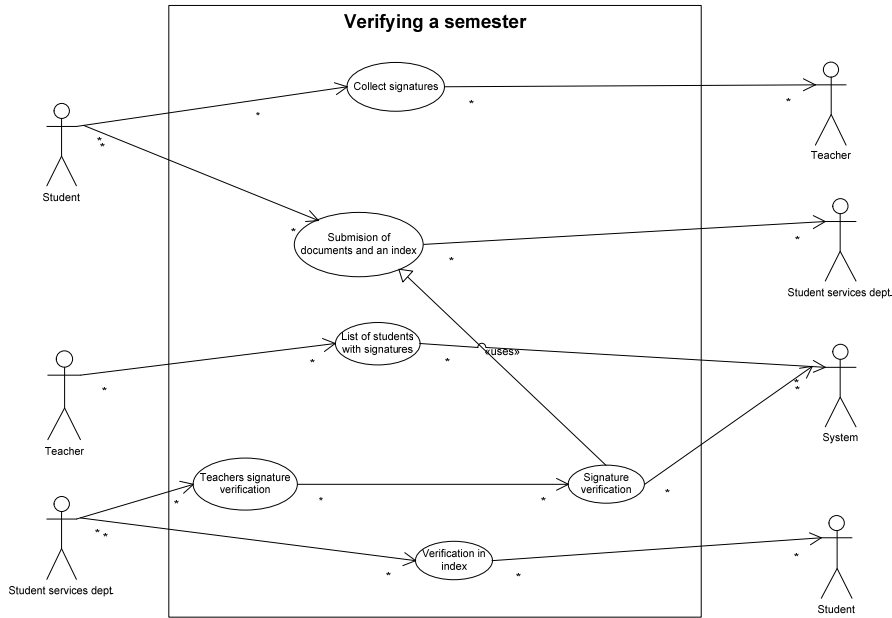
1.10.1 Use case diagrams



Enrolment in a semester



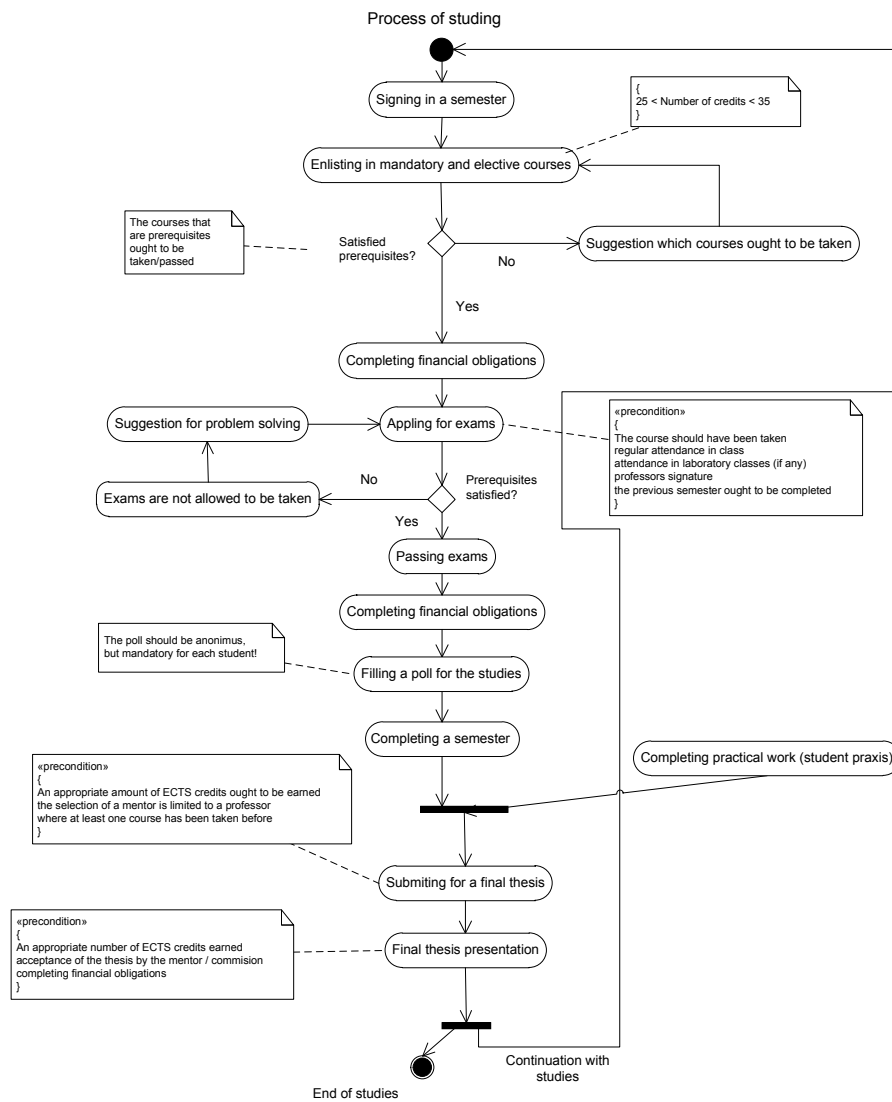
Certifying a finished semester



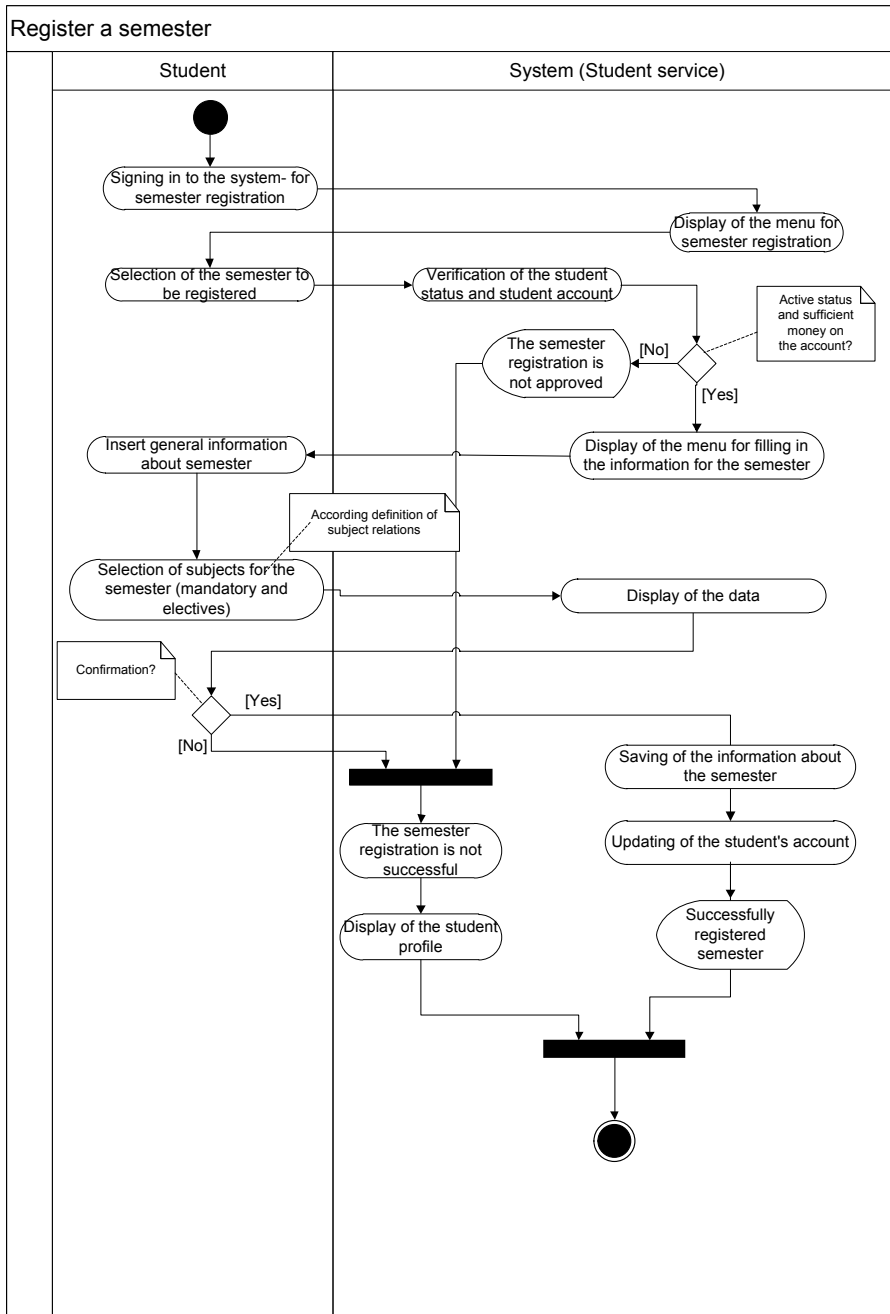
1.10.2 Activity diagrams

Process of studies

Following activity diagrams represents the business logic flow, and shows the activities and the events that make the process of studies.

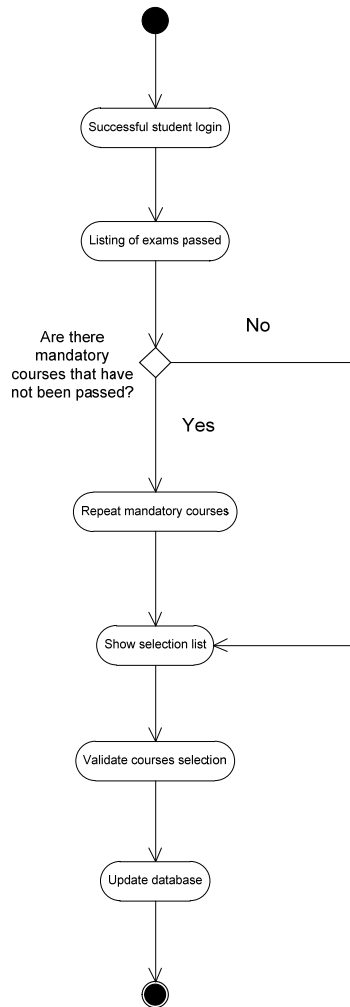


Semester enrolment

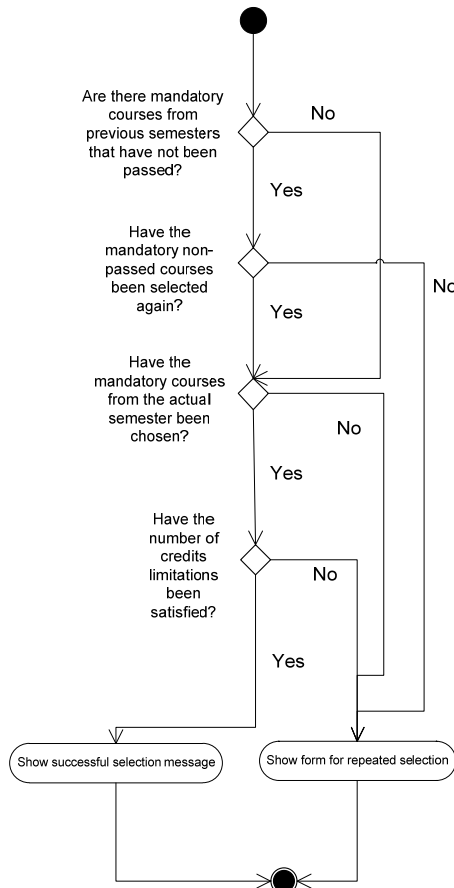


Choosing courses during semester enrolment (system)

Semester enrolment from a system aspect

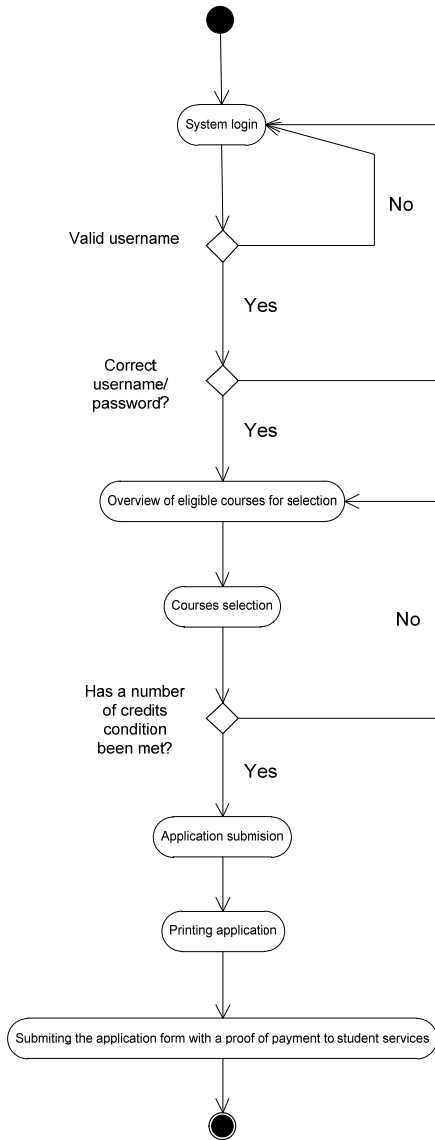


Detailed overview of system validation of the selected courses

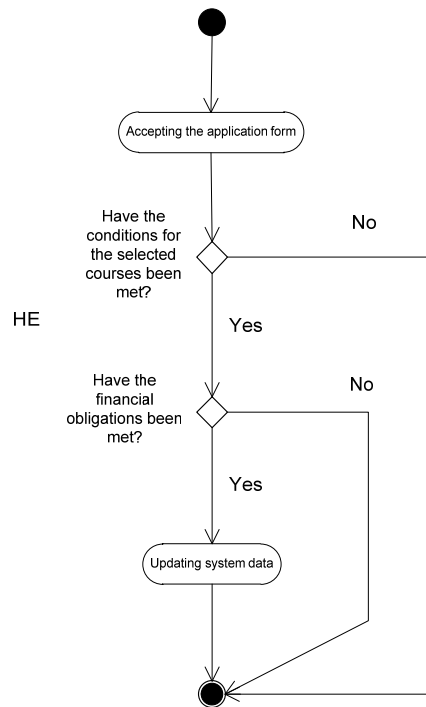


Choosing courses and enrolment in a semester

Courses selection during semester enrolment by a student

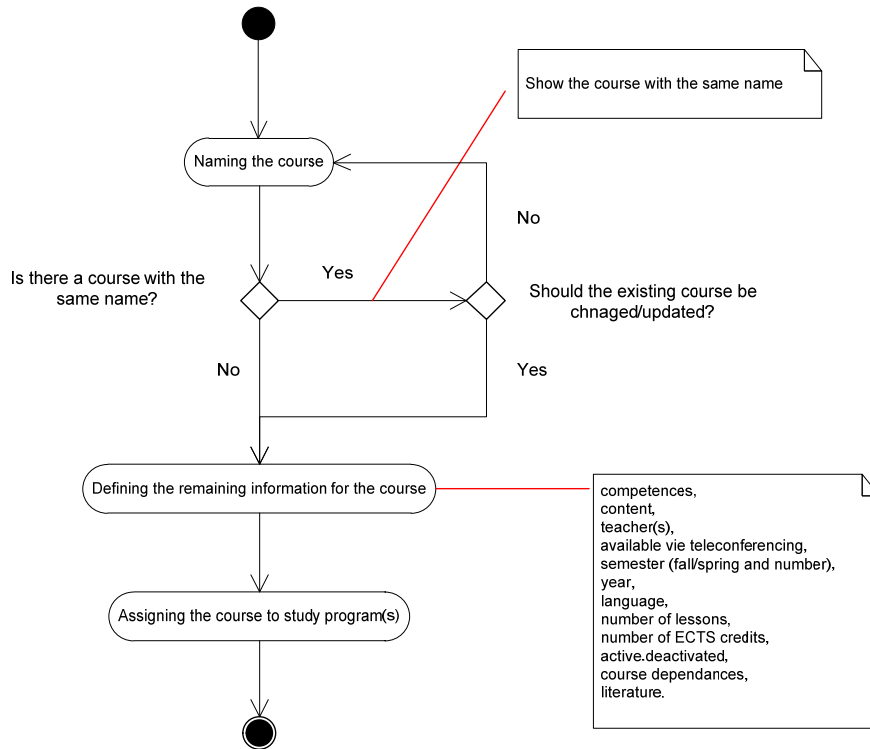


Semester enrolment performed by student services clerk



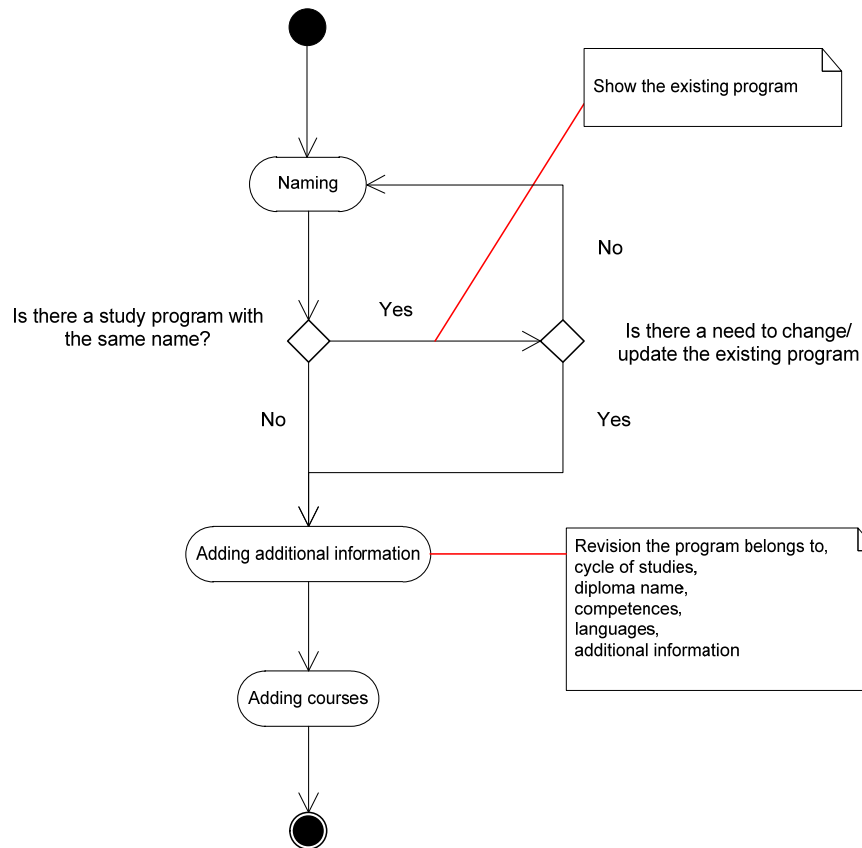
Creation of a course

Creating a new course

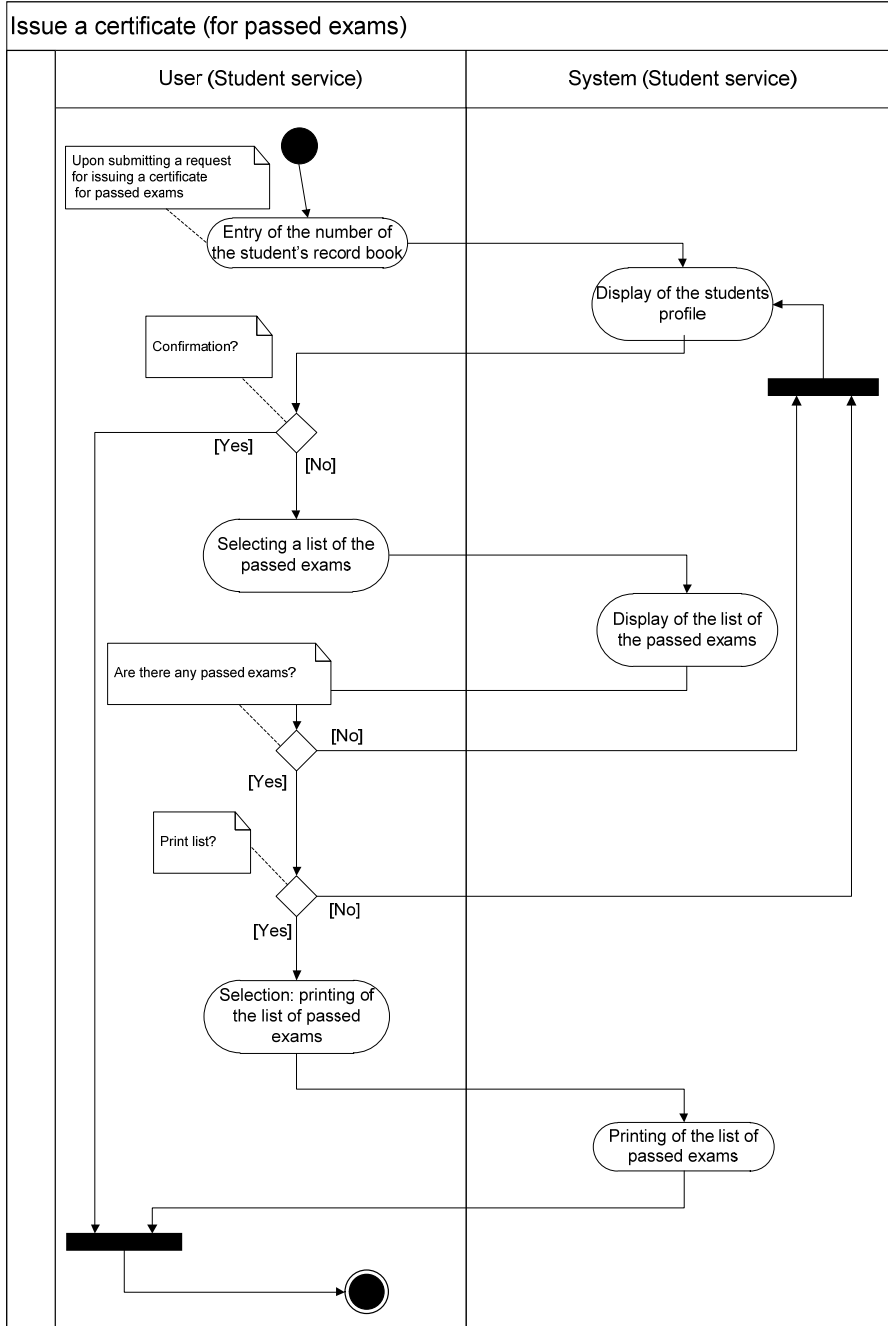


Creation of a study program

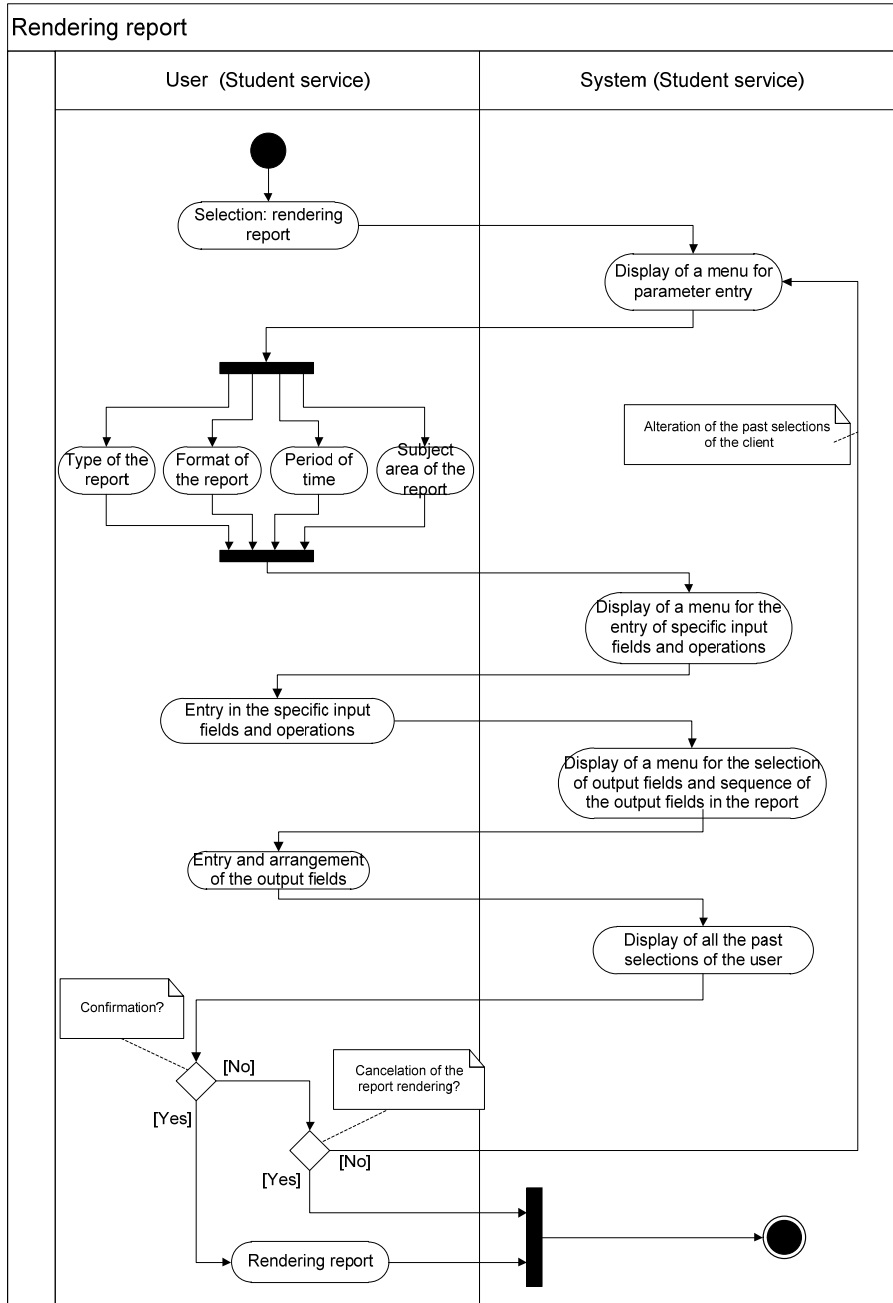
Creating a study program



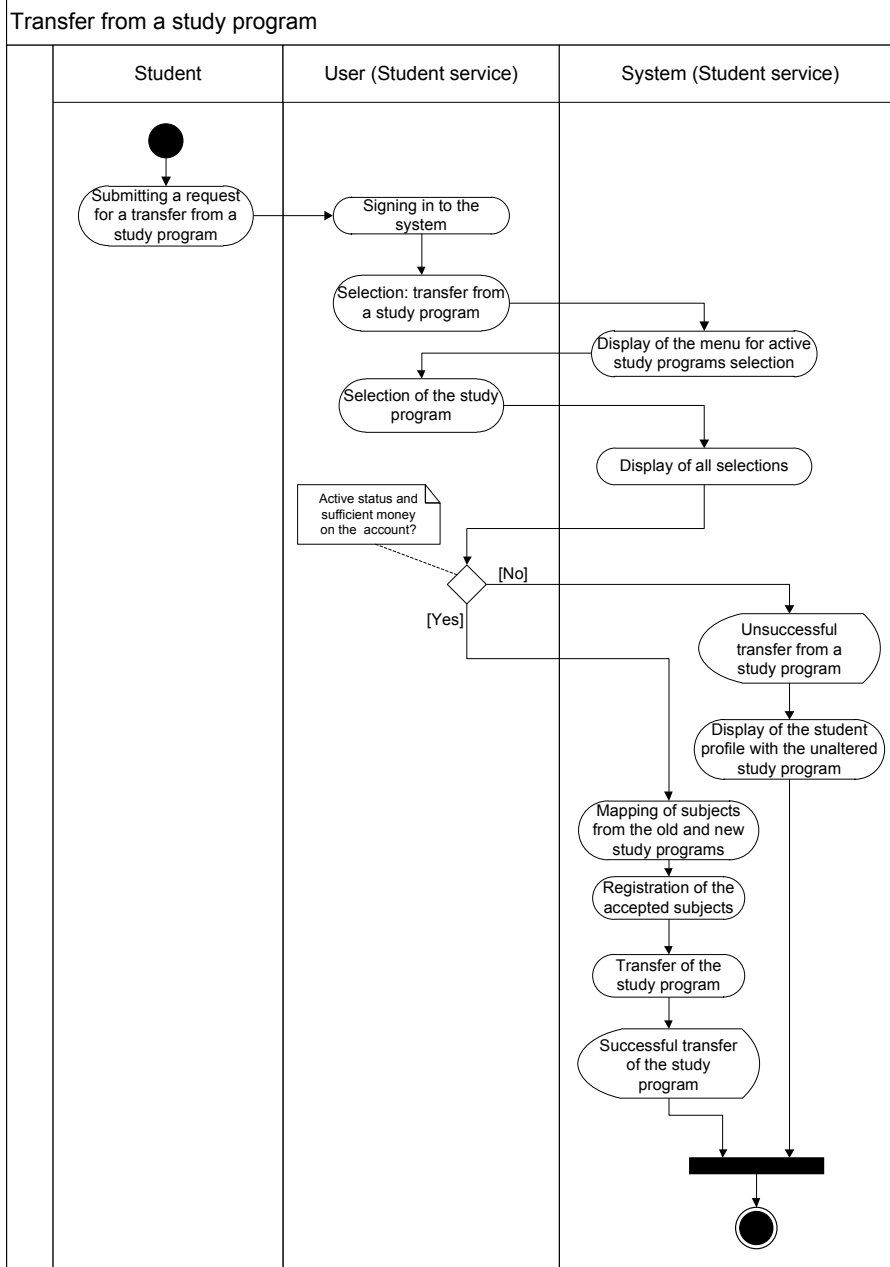
Issuing a certificate of exams passed



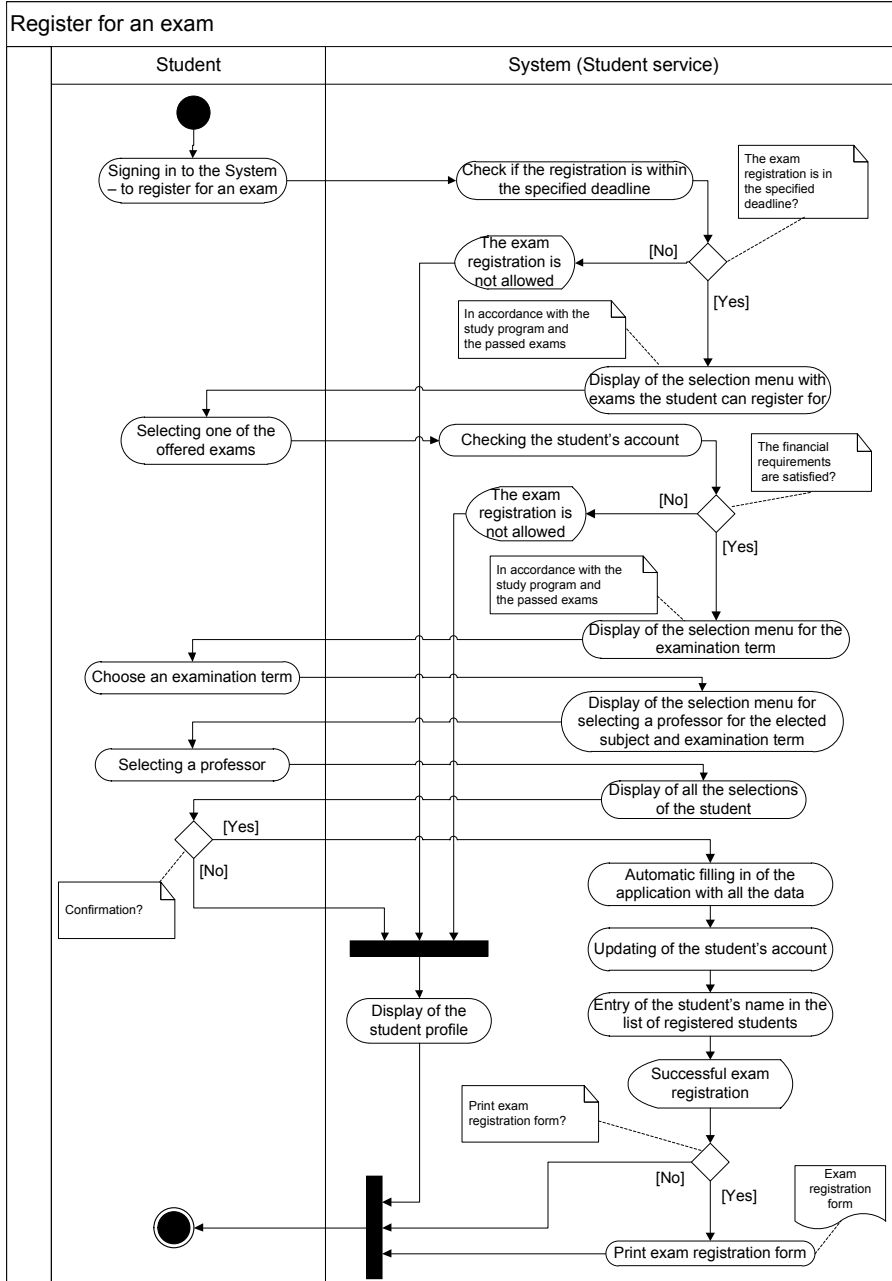
Rendering a report



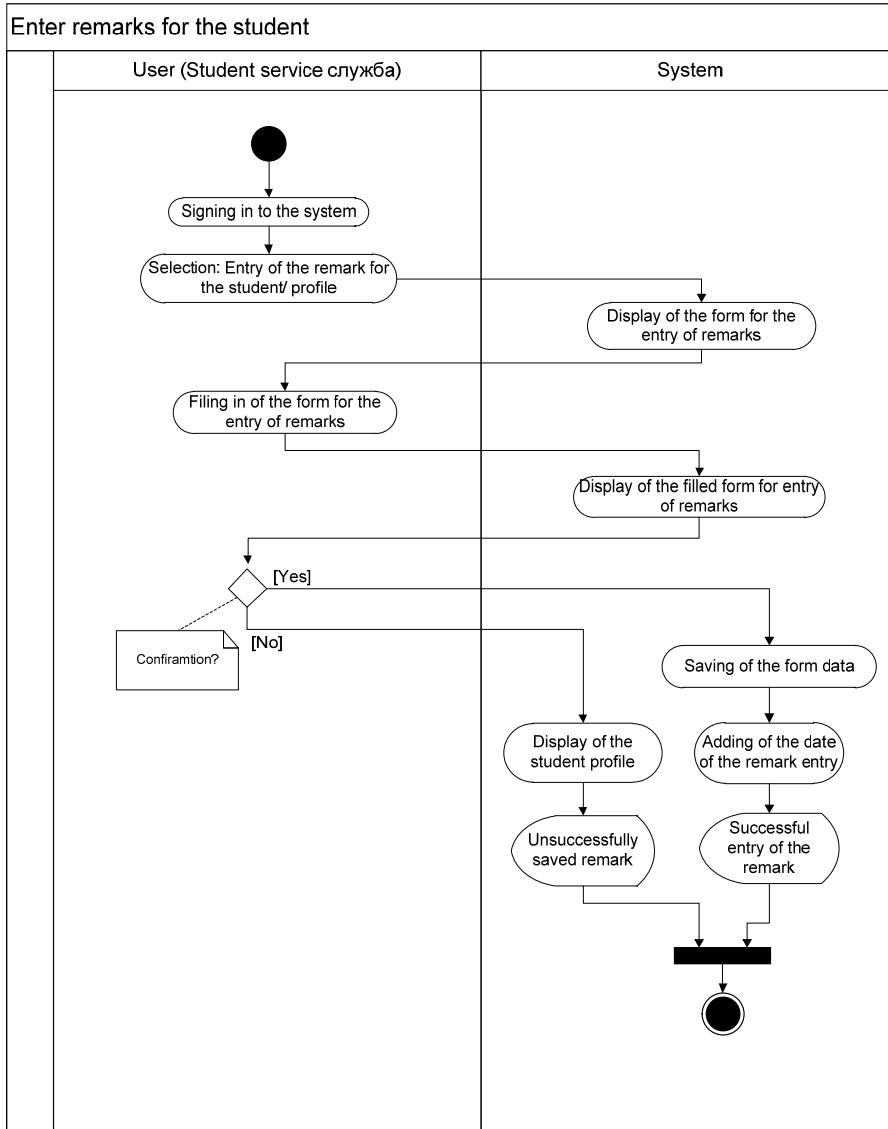
Changing a study program



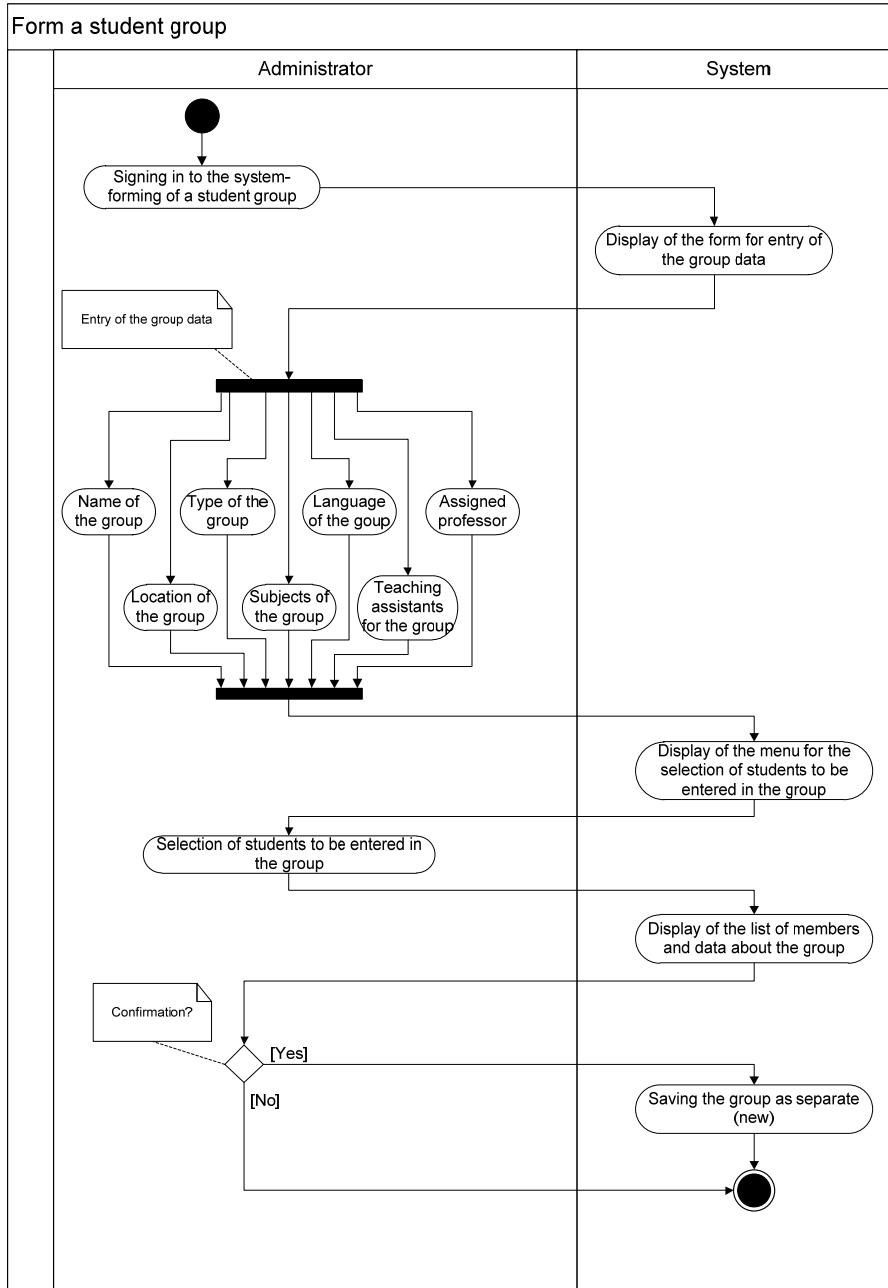
Applying for an exam



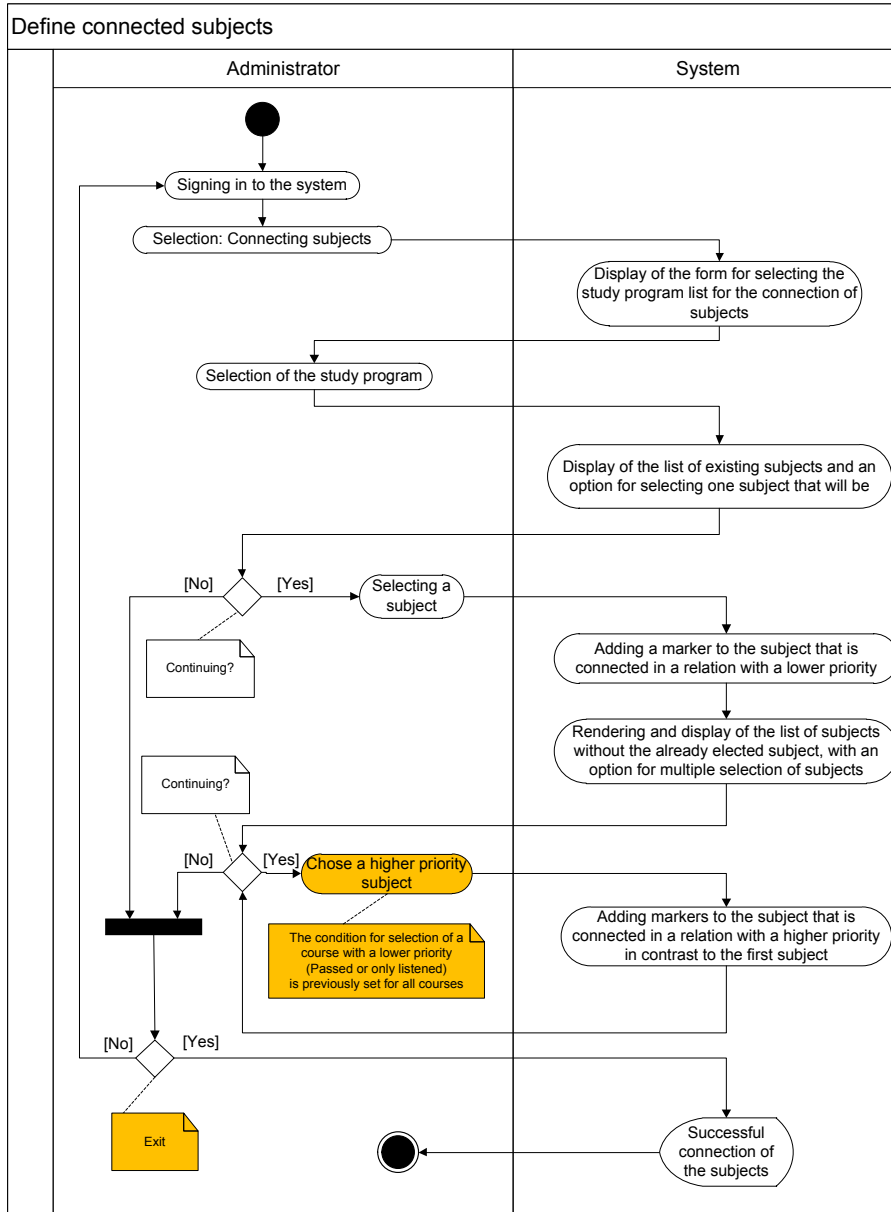
Entry of remarks for the student



Forming a student group

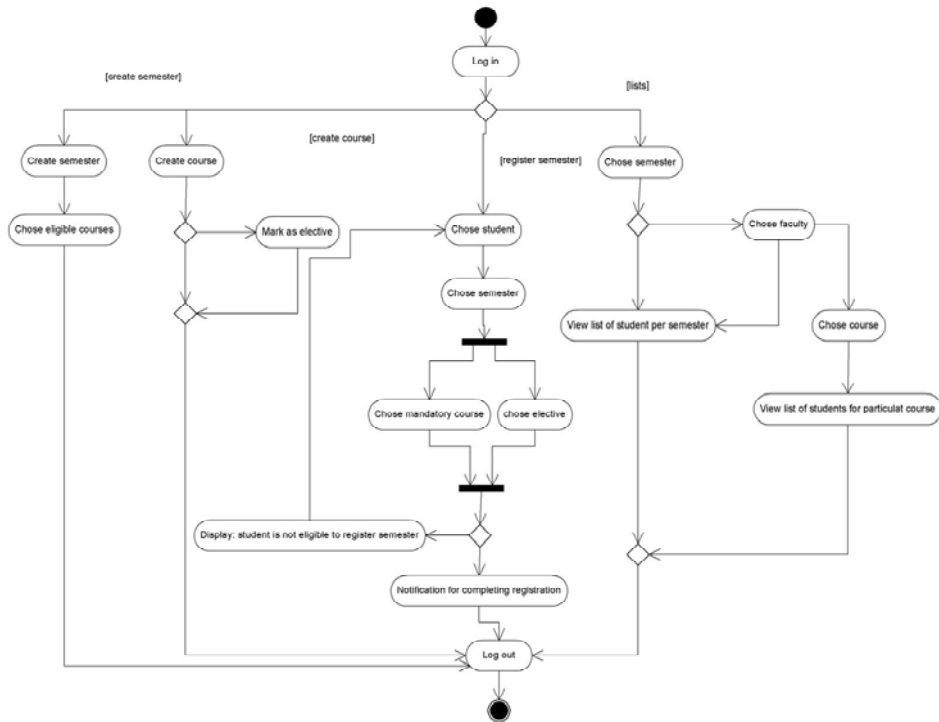


Defining connected subjects



Officer in student services activities

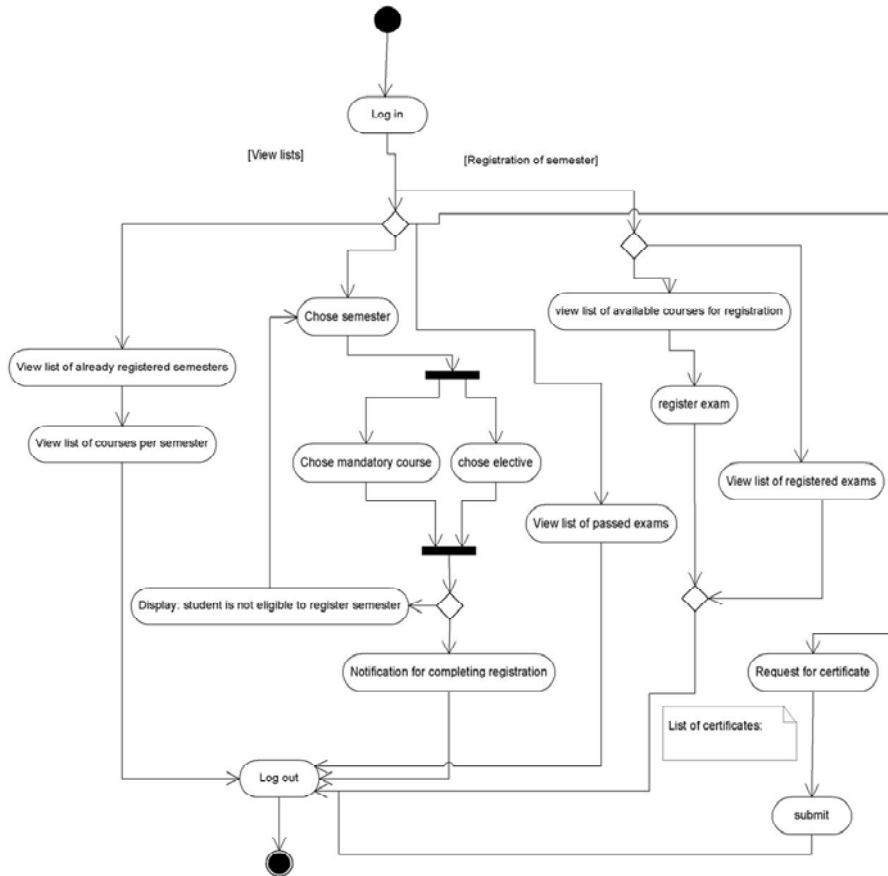
Comment [I2]: Ako gi stavime site mozni aktivnosti na vraboteniot vo sluzbata na eden dijagram, dijagramot treba da e ogroman. Najdobro celosno da go otfrlime ovoj dijagram ..



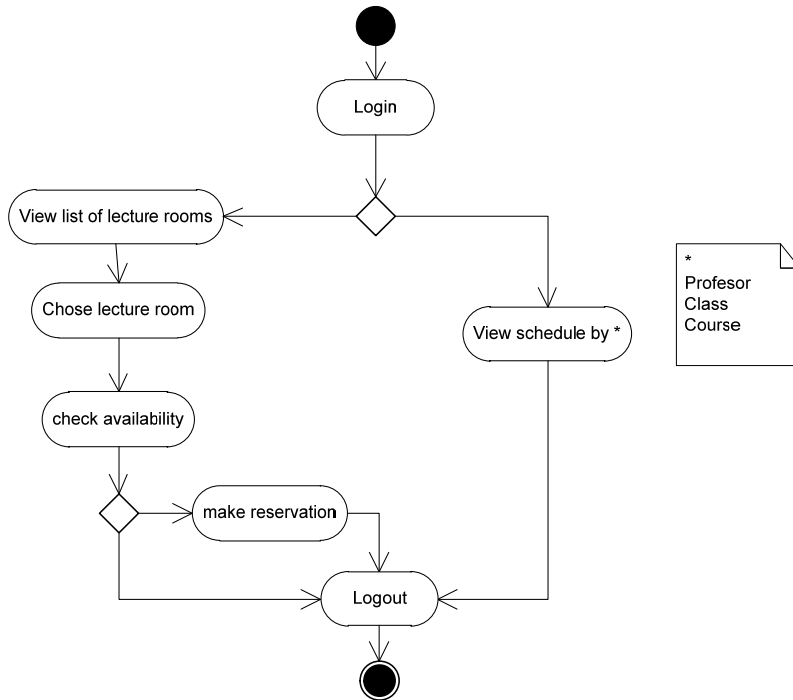
Teachers activities



Student's activities

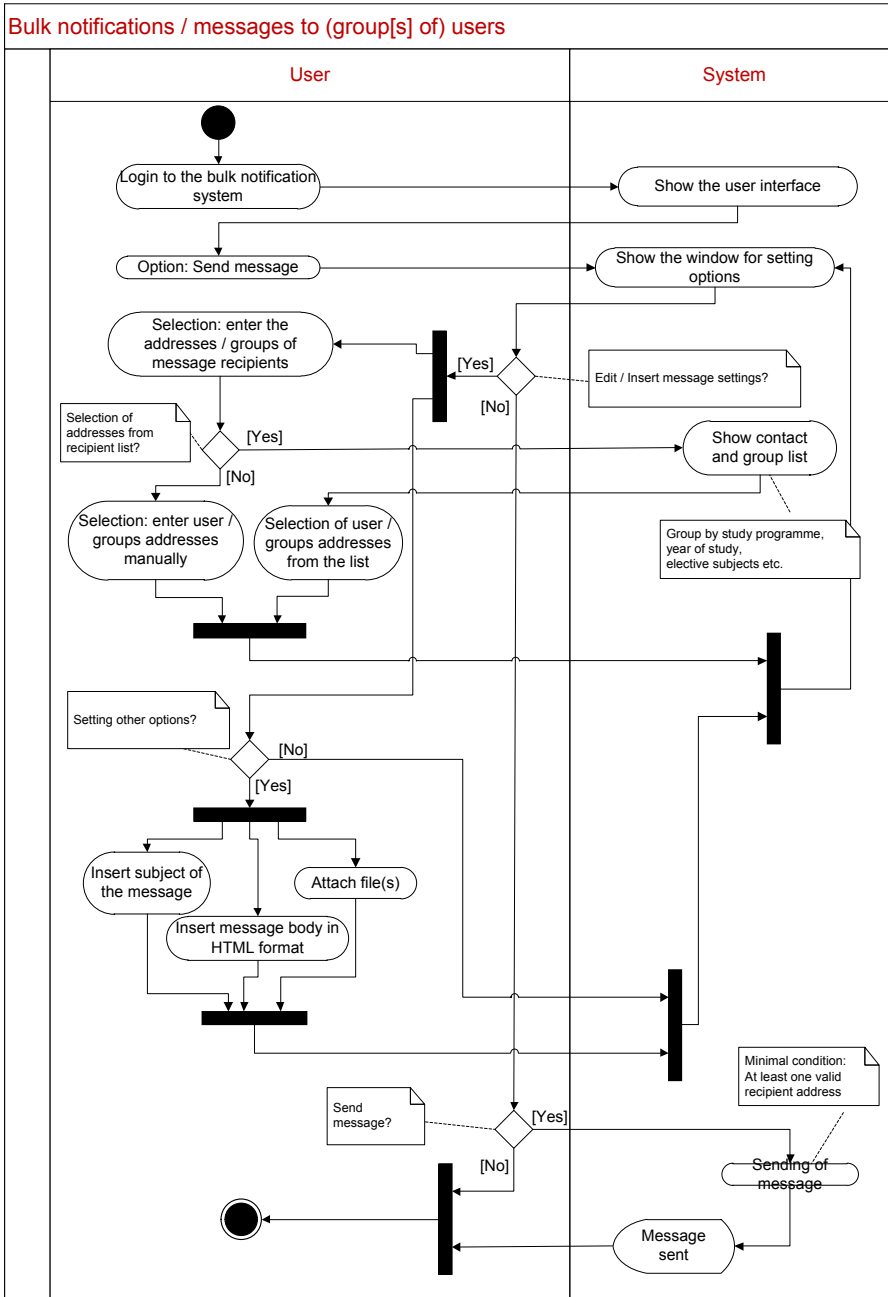


Class schedules



Bulk notifications to students

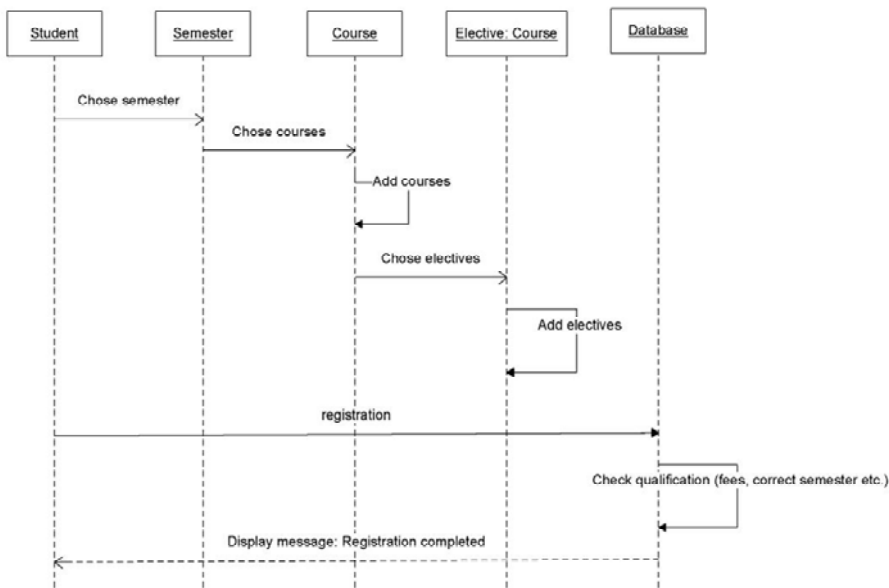
Bulk notifications / messages to (group[s] of) users



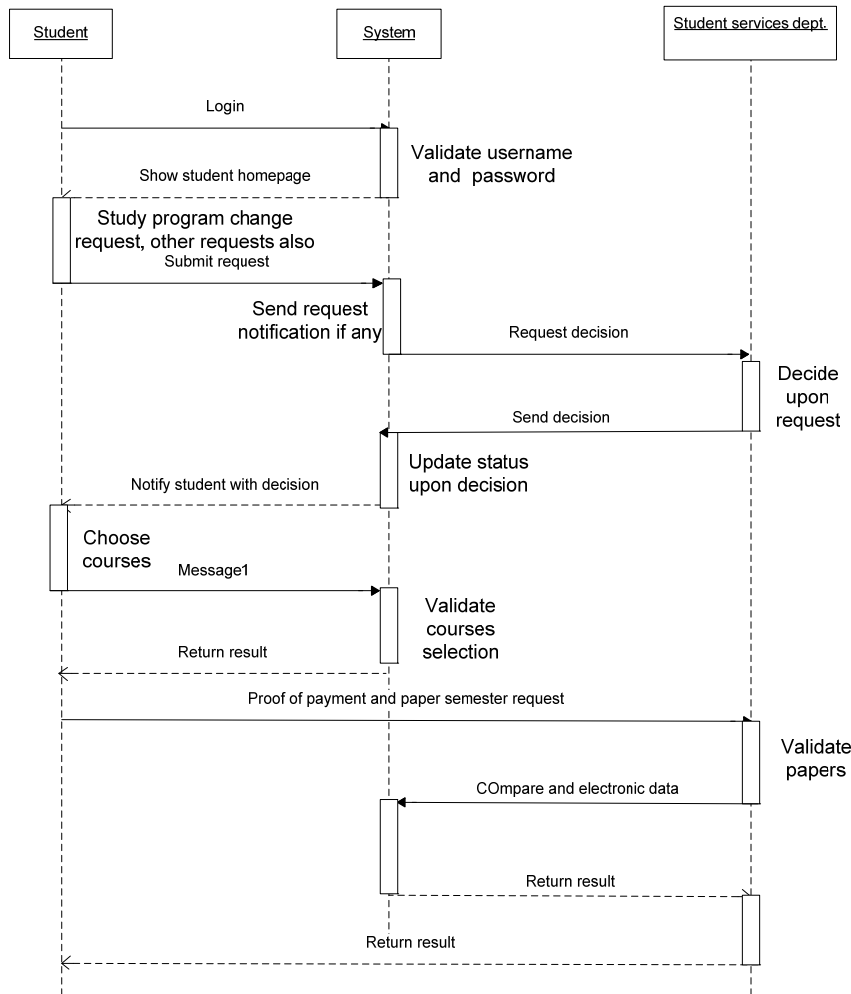
1.10.3 Sequence diagrams

Following UML sequence diagram shows the order of steps during the enrolment procedure, and the actors responsible for their execution.

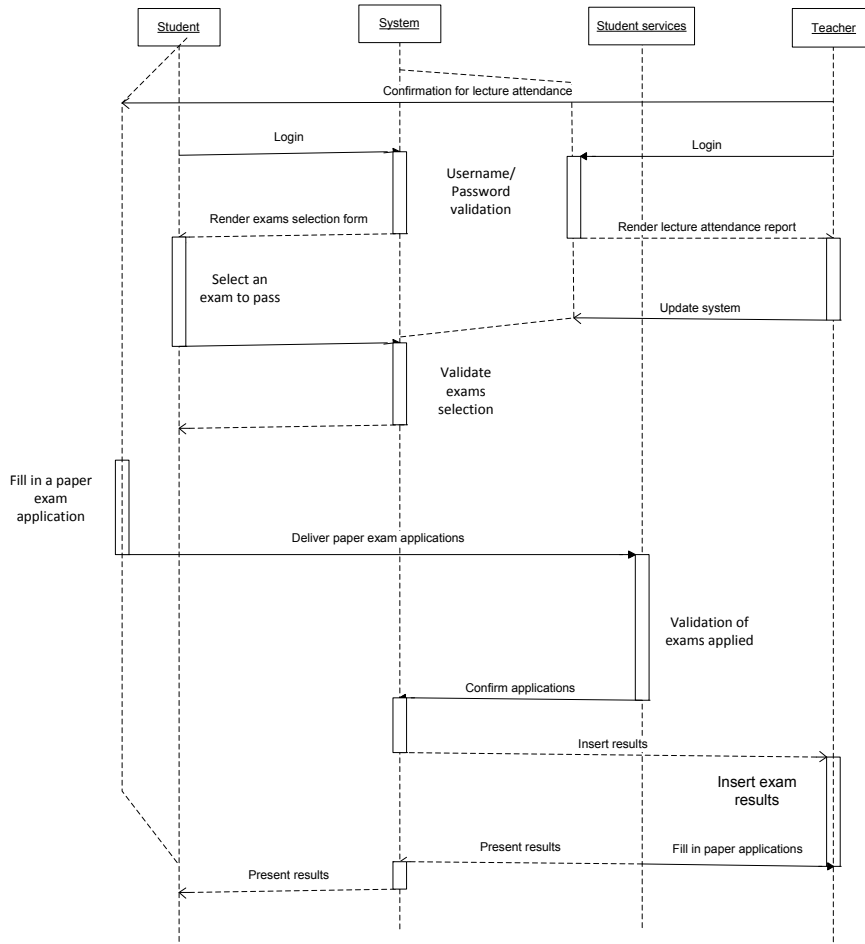
Student registration of a semester



Semester verification



Applying for an exam



1.11 User interface

1.11.1 Administration of students data

The form will consist of text fields and drop down lists showing all values in the data model of this functionality. The fields will be grouped by topic (previous education, birth information, initial enrollment data, parents etc). AJAX should be used to update dependent related fields/lists when one of the fields is changed. Insert/Update buttons should be provided.

1.11.2 Administration of students enrolment details

The form will consist of text fields and drop down lists showing all values in the data model of this functionality. The fields will be grouped by topic (previous education, birth information, initial enrollment data, parents etc). AJAX should be used to update dependent related fields/lists when one of the fields is changed. Insert/Update buttons should be provided.

1.11.3 Administration of the student semesters

The form should provide a table (grid) with previous semesters signed in by the student, along with details for each semester (quota, prices, study program, status, financial obligations uncompleted etc). There should be an option to sign up a new semester, or correct parameters in previous semesters (depending on the user privileges). When students sign up, if they change parameters that cannot be automatically allowed, a notification for later confirmation should be sent to clerks and/or vice deans.

1.11.4 Administration of students courses


The form should provide a list (checkboxes or / and multi-select list) of available allowed courses (both mandatory and optional) that the student can enlist in. The student or clerk should be able to select from the given courses. Constraints should be implemented. Failed previous courses should be preselected. Credits and semester costs should be automatically calculated during courses selection. Insert / update functionality should be provided. The access to the form by students is periodical and limited only during semester signup periods. Clerks in student services department have no limitations. Courses are presented in chronological order according to the way they are planned to be taught in the study program.

1.11.5 Administration of student exam applications

The form should provide a list of exams that the student can apply to. The list can be in form of a list of checkboxes or a multi-select list box. The student can, in a limited time window, change the selection of exams that he/she is applying for. Clerks have no time limitations. In some cases, the student can choose from a list of teachers for each exam, if there are more teachers for that exam (if that information is not connected to the group the student is part of and therefore extracted from there).

1.11.6 Administration of student's exams

- In the form for exam applications, when viewed by clerks in student services department, an option for inserting a grade for the exam should be visible, for special occasions.
- Multiple grades for more students can be inserted by the teacher or a clerk, in a form that enables listing of all students that have applied for the exam for that exam session. The form presents a list of names with dropdown lists with grades beside each name.
- There should also be a form where an excel template filled with students and grades can be uploaded for a particular exam in an exam session, for bulk insert.

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	Core module and functions	Rev: Draft.3.14

- Also a form should be enabled where an exam can be selected, an exam session, and a date, and the teacher can insert an index for a student, press Enter to see the name of the student in question (via AJAX technology), then enter the grade in the next field, then press Enter again to store the grade, and move back to the field for entering a new index. All previously inserted students are shown on a list below.
- A form should be provided with a list of all passed exams by the student, and all courses taken so far. Beside the name of every non-passed courses taken, there should be an option to insert a grade (a pop up window should enable selection of an exam session and a date when inserting a grade for the non-passed taken course).

1.11.7 Administration of seminar thesis

The form should provide a list of all courses that the student can choose for a seminar thesis and a list of teachers. Text fields for the data necessary to be inserted. The teacher should have a form listing all seminar thesis applied by students choosing him/her. The teacher can choose one of the theses and update his/hers portion of data for it. Clerks can access all three forms.

1.11.8 Administration of diploma thesis

The form should provide a list of all courses that the student can choose for a diploma thesis and a list of teachers. Text fields for the data necessary to be inserted. The teacher (mentor) should have a form listing all diploma thesis applied by students choosing him/her. The teacher can choose one of the theses and update his/hers portion of data for it. Clerks can access all three forms.

1.11.9 Administration of exam sessions

The form should provide a list of exam sessions and fields to update a selected session, or to insert a new one.

1.11.10 Administration of semesters

The form should provide a list of semesters and fields to update a selected semester, or to insert a new one.

1.11.11 Administration of quotas and tuition prices

The form should provide a list of quotas and fields to update a selected quota, or to insert a new one. Various prices for various quotas for various study programs and various start years can be inserted / updated.

1.11.12 Administration of courses in programs


The form should provide a list of study programs, and a list of courses for the program in question. Courses can be subtracted or associated to the program. When associating a course to a program, the semester number and other parameters are set for that course for the program selected.

1.11.13 Administration of courses

The form should provide a list of all courses and fields to show / update / insert details for each course.

1.11.14 Administration of programs

The form should provide a list of all programs and fields to show / update / insert details for each program.

	TEMPUS project JPGR 511342 - iKnow	SW Requirements & Design
	Core module and functions	Rev: Draft.3.14

1.11.15 Administration of programs revisions

The form should provide a list of all revisions and fields to show / update / insert details for each revision.

1.11.16 Administration of members of the faculty

The form should provide a list of all members of faculty and fields to show / update / insert details for each faculty member.

1.11.17 Diploma thesis report

The form should provide reports of diploma thesis by various filters (by professor, by course, by year, time interval, diploma thesis status etc). With this reports the professors can overview their diploma thesis. Students can choose a diploma thesis from a list of all courses and a list of professors. The form should provide a list of numbered students that chose a certain diploma thesis to appropriate professor.

1.11.18 Exams report


This form should provide reports of exam applications by students by various filters (by professor, by course, by year, time interval etc). With this reports the professors can overview the students that have applied for an exam.

Once the examination is completed, recording of grades, deployment of applications to the personal files of students and publication of lists of passed candidates can be done. This service can prepare various reports by subjects, by study program, after the test session or colloquium week:

- How many students applied for the exam and how many have passed it;
- Overview by test sessions, how many applications are recorded for each session, how many of applied students attended the exam and how many have passed it;
- Average positive grade on the exam: the ratio between the total received positive grades with the number of candidates who have passed - According to examination sessions and the chance to compare the average positive grades of each examination session.
- Average grade on the exam (ratio between total scores on the exam - positive and negative and the number of exam candidates)
- Review - out of passed students, how many passed with each grade;
- Review of candidates who passed the enrolled subject for the first time and summary by scored grades and average received positive grade of those who enrolled the subject for the first time.
- Review of candidates who passed the enrolled subject more than once and summary by scored grades and average positive grade of those who enrolled the subject for more than once.

1.11.19 Graduated report

This form should provide the report of all graduated student by various filters. How many students has graduated in each academic year, report for average grade of graduated students, report of graduated students according the nationality, sex, age, average time of studying, study program, reports for part-time graduated student and full-time graduated students. This form also should provide the report of graduated students sorted by the professor who was a mentor of the diploma thesis.

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	Core module and functions	Rev: Draft.3.14

1.11.20 Elective courses report

This form should provide reports of students by various filters (by professor, by course, by study program). The report lists how many students chose a certain elective course. With this report the professors can overview which students have applied to follow his/her course.

1.11.21 Master book

This form should provide printing the master book of enrolled students requested by the ministry of education.

1.11.22 List students per program

The form should provide reports of students per study program, how many students enrolled to any study program by various filters (sex, nationality etc...).

1.11.23 Seminar thesis report

The form should provide reports of seminar thesis by various filters (by professor, by course, by year, time interval,). With this report the professors can overview their seminar thesis. Students can choose a seminar thesis from a list of all courses and a list of professors. The form should provide a list of numbered students which choose a certain seminar thesis to appropriate professor.

1.11.24 Administration of Master thesis

The form should provide reports of master thesis by various filters (by professor, by course, by year, time interval, master thesis status etc). With this reports the professors can overview their master thesis. Students can choose a master thesis from a list of all courses and a list of professors. The form should provide a list of numbered students which choose a certain master thesis to appropriate professor.

1.11.25 Issuing documents

The form should provide various types of documents - certificates, confirmation documents, forms, and announcements and other required documentation, reviews. It prepares various statistical reports in collaboration with students, teachers and the needs of the University management.

Some requirements for certificates, confirmation documents and so on, can be completed online, but will have to be submitted in person at Administrative office, to protect against abuse of the system.

In the course of study, students need confirmation documents of their status. The system will automatically provide the same issue on the basis of data on students who entered in the system.

In the course of study, students need certificates for passed exam to compete for scholarships, credits, student homes and so on.

After passing all the exams, at the request of the student, the Administrative Office issues transcripts and certificate that the student graduated – certificate for the acquisition of experts knowledge and passed exams.

The student who wants to transfer to another educational institution, at their request, a sign out document is issued.

1.11.26 Issuing news and announcements

The form should provide timely and accurate information for students. It is necessary to provide bulleting to:

- Reports which will be generated by the system (report of examination held, a list of exams per year and guidance, etc.);

- Other appropriate announcements (for example - a announcement for approved additional test session, an announcement of deferred exam or colloquium, announcement for delayed classes, announcements for seminars, training etc..);
- Schedule of classes;
- Schedule of exams;
- Sessions and so on.

This kind of reports should be available on the Web.

The form, also, should provide the timely information and continuity in curriculum, the teachers could highlight different announcements, students statements and other notices in connection with teaching units, classes, classes delay, holding a variety of extracurricular activities and more. Also, there is a need to define a determined period of validity of the bulletin announcement on-line "bulletin board".

1.11.27 Administration of class schedule

The form should provide each student with the opportunity to examine currently enrolled subjects, professors and assistants, who will teach these subjects, the whole schedule with the total number of class duration.

1.11.28 Administration of faculties

The form should provide a list of all faculties and fields to show / update / insert details for each faculty.

1.12 Data model

This section describes the data entities, and the business rules related to them.

1.12.1 Student profile

Functionality

- **List:** Provide a list of all students enrolled in the university/faculty.
- **Search** for students by various criteria (index, name, surname, program, start year, etc).
- **Maintain** the personal details stored for each student.
- **Auditing:** All changes to student's data are logged.

Fields

Data stored for each student during studies and after			
Initial details acquired from the enrolment process			
Field	Description	Type	Possible Values
Index	Unique identifier of the student	text	
Master book number	Unique number in the master book of students	number	
Faculty	Name of the Faculty	Selection, Single	Stored list in a database
Study program	Name of the program	Selection, Single	Stored list in a database
Location	Location of the studies	Selection, Single	Stored list in a database
Status	Student status	Selection, Single	Full time / Part time
Language	Study language	Selection, Single	Macedonian, Albanian, English
Study cycle	Cycle of studies	Selection, Single	1,2,3
Start year	Year of enrolment	Number	
Previous credits	Credits from previous education	Decimal	
Previous diploma number	Previous diploma number	text	
Initial quota	Payment quota in the time of enrolment	Selection	Stored list in the database
Personal Data			

Surname	Surname	text	
Maiden surname	Maiden surname	text	
Father's name	Father's name	text	
Name	Name	text	
EMBG	Unique number of the citizen	text	
Date of birth	Date of birth	Date	
Place of birth	Place of birth	text	
Municipality of birth	Municipality of birth	text	
Birth Country	Country of birth	text	
Sex	Sex	Selection, Single	Male / Female
Citizenship	Citizenship	text	List stored in the database
Ethnicity	Ethnicity	text	
Address			
Town	Place of living	text	
Street	Street	text	
Number	Street Numbers	text	
Municipality	Municipality	text	
Country	Country	text	
Contact/Phones			
Home	Home phone number	text	
Cellular	Cellular Phone number	text	
Office	Office phone number	text	
E-Mail	e-mail	text	
Previous education			
Name of previous school	Name of previous school	text	
Town	Place of previous education	text	
Profession	Profession, educational profile of the previous education	text	
Average grade of the previous education	Average grade of the previous education	Decimal number	
Foreign languages studied	Foreign languages studied in the previous education	Selection, Multiple	Stored list in the database

Tuition payer	Person paying the tuition	Selection, Multiple	Parent/Guardian; personally, Other person; completely free of charge; partial discount
Year of completion	Year of completion	Number	
Personal data for the parent / guardian			
Name and Surname	Name and Surname	text	
Profession	Profession	text	
Employment	Employment	text	
Other			
Scholarship	Whether the student is receiving a scholarship	Selection, Single	Yes/No
Scholarship provider	Provider of the scholarship	text	

Business rules and access rights

- Fields are grouped in blocks according to related topic.
- Some of the fields are connected (changing the start year affects the available list of study programs and quota prices; change in the start study program changes the available quota prices; change in study cycle changes the available list of programs, etc).
- Students can access for reading most of the fields (their own record only), while can only change a small subset (contact information etc.). Clerks at the student services can read and change all data for all students (limitations for clerks at one faculty for students at that faculty only).
- There is a different rule for generating index numbers in each faculty

1.12.2 Staff and members of faculty profile

Functionality

- **List:** Provide a list of all staff members.
- **Search** for staff members by name, surname, education, title.
- **Maintain** the list of staff members.
- **Auditing:** All changes to staff members are logged.

Fields

File form for academic staff			
Field	Description	Type	Possible Values
Name	Name	Text	
Surname	Surname	Text	
EMBG	Citizen ID of employee	Text	

Residence	Residence	Text	
Municipality	Municipality of residence	Selection, Single	Stored list in a database
Profession	Profession	Selection, Single	Stored list in a database
Undergraduate title	Diploma degree title	Selection, Single	Stored list in a database
Undergraduate field	Field of earned degree	Selection, Single	Stored list in a database
Undergraduate date	Date of accomplishment of undergraduate studies	Date	
Undergraduate institution	Institution of undergraduate studies	Selection, Single	Stored list in a database
Doctorate title	Doctorate degree title	Selection, Single	Stored list in a database
Doctorate field	Field of earned degree	Selection, Single	Stored list in a database
Dissertation	Doctor dissertation title and mentor	Text	
Doctorate date	Date of accomplishment of doctorate studies	Date	
Doctorate institution	Institution of doctorate studies	Selection, Single	Stored list in a database
Election	Election of title for subject or field	Text	
Announcement Date	Announcement date for election of title	Date	
Election Date	Election date	Date	
Expiration date	Date of expiration of election	Date	
Entrusted subjects	Entrusted subjects	Selection, Multiple	All courses in the database
Releases	Books released, or other teaching materials	Text	
Function	Function	Text	
Faculty	Assigned to faculty	Selection, Single	
Employment Date	Employment Date	Date	
Termination Date	Date of termination of employment	Date	

Business rules and access rights

- Fields are grouped in blocks according to related topic.
- Staff members (teachers) can access for reading most of the fields (their own record only), while can only change a subset (contact information etc.). Administrators can read and change all data.
- Administrator confirms and accepts changes made by teachers in their profile.

1.12.3 Faculty staff’s studies

Functionality

- **List:** Provide a list of all academic achievements of faculty members (diplomas).
- **Search** for diplomas staff member, type of education, title.
- **Maintain** the list of diplomas.
- **Auditing:** All changes to diplomas are logged.

Fields

File form for academic achievements of accademic staff			
Field	Description	Type	Possible Values
Staff member	The staff member in question	Text / ID	
Postgraduate title	Masters degree title	Selection, Single	Stored list in a database
Postgraduate field	Field of earned degree	Selection, Single	Stored list in a database
Thesis	Master thesis title and mentor	Text	
Postgraduate date	Date of accomplishment of postgraduate studies	Date	
Postgraduate institution	Institution of postgraduate studies	Selection, Single	Stored list in a database

Business rules and access rights

- Staff members (teachers) can access all fields (their own record only) and make changes that the administrator should confirm later. Administrators can read and change all data.
- Administrator confirms and accepts changes made by teachers in their profile.

1.12.4 Revisions of study programs

Functionality

- **List:** Provide a chronological list of all revisions of study programs.
- **Search** for revisions of study programs.
- **Maintain** the list of revisions.
- **Auditing:** All changes to revisions are logged.

Fields

Revisions of study programs

Field	Description	Type	Possible Values
Name	Name	Text	
Start year	The beginning year of the new study programs	number	
Faculty	The faculty that the revision is associated to	Text / ID	Stored in the database

Business rules and access rights

- Administrators, vice-deans (for their faculty only), student services clerks (for their faculty only) can read and change all data.

1.12.5 Study programs

Study program is the officially acknowledged and accredited comprehensive set of compulsory and elective course units that define the principal field of study

Functionality

- List:** Provide a list of all study programs.
- Search** for study programs according to revisions, study cycles, names, and faculty.
- Maintain** the list of study programs.
- Auditing:** All changes to study programs are logged.

Fields

Study programs			
Field	Description	Type	Possible Values
Name	The name of the program	Text	
Code	Short name	Text	
Study Cycle	Cycle of studies for the program	Selection, Single	1, 2, 3
Revision	The revision of study programs that the program belongs to.	Number	List stored in a database
URL	Web page for the program	Text	
Duration semesters	The number of semester the program lasts	Number	
ECTS credits	Credits necessary for finishing	Number	
Diploma Name	The name of the diploma received	Text	
Faculty	The faculty that the program is associated to	Text / ID	List stored in the database

Business rules and access rights

- Administrators, vice-deans (for their faculty only), student services clerks (for their faculty only) can read and change all data.

1.12.6 Quotas

Functionality

- **List:** Provide a list of all quotas that the students can be enrolled in.
- **Search** for quotas according to study cycles, names, faculty.
- **Maintain** the list of quotas.
- **Auditing:** All changes to quotas are logged.

Fields

Quotas			
Field	Description	Type	Possible Values
Name	Name	Text	
Full Time	Full time / part time	Selection, Single	1,0

Business rules and access rights

- Administrators, student services clerks (for their faculty only) can read and change all data.

1.12.7 Quota prices

Functionality

- **List:** Provide a list of all quota prices per quota per year per faculty that the students can be enrolled in.
- **Search** for quota prices according to quota, study cycles, faculty.
- **Maintain** the list of quota prices.
- **Auditing:** All changes to quota prices are logged.

Fields

Quota prices			
Field	Description	Type	Possible Values
Quota	Name	Selection, Single	Stored list in the database
Study Program	The study program that the quota price is applicable to	Selection, Single	Stored list in the database
Start year	Starting year of validity of the price	Number	
Price per credit	Price per ECTS credit	Number	
Price per year	Price for whole year	Number	
Faculty	The faculty that the quota price is associated to	Text / ID	Stored in the database

Business rules and access rights

- Administrators, student services clerks (for their faculty only), financial clerk can read and change all data.

1.12.8 Financial services

Functionality

- **List:** Provide a list of all prices for financial services per year per faculty per study program.
- **Search** for prices for financial services according to various criteria.
- **Maintain** the list of all prices for financial services.
- **Auditing:** All changes to prices for financial services are logged.

Fields

Financial services			
Field	Description	Type	Possible Values
Service	Name (type) of the service provided	Selection, Single (ID)	Stored list in the database (there should be a editable table defined of services in the database)
Study Program	The study program that the service price is applicable to	Selection, Single	Stored list in the database
Start year	Starting year of validity of the price	Number	
Amount	Amount of the price - cost	Number	
Faculty	The faculty that the price is related to	Selection, Single	Stored list in the database
Student Quota	The quota of students that the price is associated to	Text / ID	Stored list in the database

Business rules and access rights

- Administrators, student services clerks (for their faculty only), financial clerk can read and change all data.
- The table is used to calculate the amount a student should pay when being provided with a service by the university.

1.12.9 Semesters

Functionality

- **List:** Provide a chronological list of semesters.
- **Search** for semesters.
- **Maintain** the list of semesters.
- **Auditing:** All changes to semesters are logged.

Fields

Semesters			
Field	Description	Type	Possible Values
Start date	Starting date of the semester	Date	

End date	Ending date of the semester	Date	
Fall/Spring	A flag differentiating fall and spring semesters	Selection, Single	Fall, Spring

Business rules and access rights

- Administrators, student services clerks (for their faculty only) can read and change all data.
- Each semester keeps a different constellation of teachers covering courses at different study programs.

1.12.10 Courses

Functionality

- **List:** Provide a list of all courses that the students can take.
- **Search** for courses according to names, study program, cycle, semester, credits, etc.
- **Maintain** the list of courses.
- **Auditing:** All changes to courses are logged.

Fields

Courses			
Field	Description	Type	Possible Values
Name	Name of the course	Selection, Single	Stored list in the database
Study Program	The study programs that the course is applicable to	Selection, Multiple	Stored list in the database
Mandatory	Is the course mandatory or optional in each study program that the course is listed	List	True/false
Semester	The semester that the course is taught in each of the study programs where it is listed	List	Numbers
Semesters	The number of semesters the course is taught	Number	
Credits	Number of ECTS credits	Number	
Faculty	The faculty that the course is associated to	Text / ID	Stored in the database
Study cycle	In which study cycle the course is taught	Selection, Single	1, 2, 3
Lessons	Weekly number of classes	Text	

Business rules and access rights

- Administrators, student services clerks (for their faculty only) can read and change all data.
- The system should allow definition of equivalence (compatibility for recognition) of courses from previous programs of study subjects with the current study programs.
- In the system, multiple teachers can teach one course
- In the system, one course belongs to one or more study programs

1.12.11 Student's semesters

Functionality

- **List:** Provide a list of all semesters that a particular student has enrolled in.
- **Maintain** the list of semesters for the student.
- **Auditing:** All changes to student semesters are logged.

Fields

Student's semesters			
Field	Description	Type	Possible Values
Student	The student that signed up a semester	Text / ID	All the students
Semester Code	The semester that the student signed up	Text / ID	All semesters
Study Program	The study program that the student is enrolled in	Text / ID	All programs
Quota Price	The quota price for the student for this semester	Text / ID	All quota prices
Fulltime	Fulltime/Part-time	Boolean	0,1
Verified	Whether the semester is verified or not	Boolean	0,1
Verification Date	The date of verification of the semester	Date	
Semester	The order number of semester for the student	Number	1,2,3,4...

Business rules and access rights

- Students can sign in for a new semester
- Students can apply for changes in study program or style of studies (fulltime) when signing in a semester
- Student services clerks and/or vice deans (for their faculty only) can accept or deny student requests after being notified.
- Student services clerks (for their faculty only) can read and change all data.
- It is assumed that each student upon enrollment gets an account in the Library system. When the student applies for signing up a semester, the system requires information from the library module if the student has returned the books borrowed more than a year before the date of semester sign up.

1.12.12 Exam sessions

Functionality

- **List:** Provide a list of all exams sessions.
- **Search** for exam sessions according to names, dates, cycle.
- **Maintain** the list of sessions.
- **Auditing:** All changes to exam sessions are logged.

Fields

Exam sessions			
Field	Description	Type	Possible Values

Name	Name of the session	Text	
Start Date	Starting date of the session	Date	
End Date	Ending date of the session	Date	
Faculty	The faculty that the session is associated to	Text / ID	Stored list in the database

Business rules and access rights

- Student services clerks and/or vice deans (for their faculty only) create and change exam sessions.

1.12.13 Student's courses

Functionality

- **List:** Provide a list of all courses that a student has chosen to follow.
- **Search** for courses according to names, semester, etc.
- **Maintain** the list of courses.
- **Auditing:** All changes to courses are logged.

Fields

Student's courses			
Field	Description	Type	Possible Values
Student	The student that signed up for a course	Text / ID	All the students
Course	The course that the student signed up	Text / ID	All semesters
School year		Integer	2010, 2011, ...
Study year		Integer ∈ {0, 1, 2, 3, 4, 5}	

Business rules and access rights

- The student selects and chooses the course he/she is going to follow in the next semester
- Constraints in the selection of courses per student include:
 - Courses are limited to the ones tied to the study program the student is enrolled in
 - There is a 35 (40) credits sum per semester limitation for students. Breach of credits sum must be confirmed by vice deans
 - Connections and dependences among courses must be respected
 - The courses are offered ordered by semesters
 - Failed courses must be signed up again. Change in failed elective courses must be accepted by student services clerks
 - Payments for the selected courses and course changes must be in place
 - Periodical limitations for the edit-ability of the selections must be maintained
 - For taking a course without prerequisites, the teacher and vice dean must authorise

- Student services clerks (for their faculty only) can change data at any time according to student requests.

1.12.14 Student's exam applications

Functionality

- **List:** Provide a list of all exam applications that a student has made.
- **Search** for exam applications according to semester, course, student, teacher etc.
- **Maintain** the list of exam applications.
- **Auditing:** All changes to exam applications are logged.

Fields

Student's exam applications			
Field	Description	Type	Possible Values
Student	The student that applied for an exam	Text / ID	All students
Course	The course that the student applied to pass	Text / ID	All courses of the student
Grade	The grade the student received	Number	5,6,7,8,9,10
Teacher	The quota price for the student for this semester	Text / ID	All teachers
Exam date	Date of the exam	Date	
Partial	Partial exam, or full	Boolean	0,1

Business rules and access rights

- The student applies for an exams he/she is going to take in the particular exam session
- Constraints in the exam applications include:
 - Courses are limited to the ones the student has taken in the previous two semesters
 - Periodical limitations for the edit-ability of the exam applications must be maintained
 - Students cannot enter grades for their exam applications
- Teachers can update grades for their courses and their students after the exam has taken place
- Student services clerks (for their faculty only) can change data at any time according to student requests or teachers reports.
- Fast user interface must obtained for functionalities like this one, where massive amount of data should be processed
- Bulk insert of exam results via excel import with a standardized template must be provided.
- The system should allow the cancellation of exams for the head of student affairs.
- The system can print reports completely filled with data, so teachers will sign only the application to make it valid.

1.12.15 Exam schedules

Functionality

- **List:** Provide a list of all exam schedules in an exam session.

- **Search** for exam schedules according to course, teacher etc.
- **Maintain** the list of exam schedules.
- **Auditing**: All changes to exam schedules are logged.

Fields

Exam Schedules			
Field	Description	Type	Possible Values
Exam session	The exam session that the exam takes place in	Text / ID	All sessions
Course	The course that the student applied to pass	Text / ID	All active courses
Exam date	Date of the exam	Date	
Places	The rooms the exam takes place	List	List stored in the database

Business rules and access rights

- Student services clerks (for their faculty only) can change data at any time.

1.12.16 Course prerequisites

Functionality

- **List**: Provide a list of all course connections and prerequisites.
- **Search** for course prerequisites according to course name.
- **Maintain** the list of course connections and prerequisites.
- **Auditing**: All changes to course connections and prerequisites are logged.

Fields

Course dependencies			
Field	Description	Type	Possible Values
Prerequisite course	The course that is a prerequisite for the course in question	Text / ID	All active courses
For course	The course whose prerequisite is stated	Text / ID	All active courses
Passed/listened	Whether the dependency demands for passed or only listened prerequisite course	List	


Business rules and access rights

- Student services clerks and/or vice deans (for each faculty) can insert and update course dependencies.

1.12.17 Master thesis

Functionality

- **List**: Provide a list of all master thesis submitted.
- **Search** for master thesis according to students, mentors, courses, names.
- **Maintain** the list of master thesis.

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- **Auditing:** All changes to master thesis are logged.

Fields

Master thesis			
Field	Description	Type	Possible Values
Thesis Number	Code of the thesis	Text	
Name	Name of the thesis	Text	
Description	Description of the thesis	List	
Student	The student that applied with the master thesis	Text / ID	All students
Mentor	The mentor of the thesis	Text / ID	All teachers
Commission President	The president of the committee for thesis presentation	Text / ID	All teachers
Member	Member of the committee for thesis presentation	Text / ID	All teachers
Credits	ECTS credits earned with the thesis	Text	
Grade	Grade awarded	Number	
Application Date	Date of thesis application	Date	
Submission Date	Date of thesis submission	Date	
Presentation Date	Date of thesis presentation	Date	
Supplement	Code of diploma supplement	Text	
Supplement Date	Date of diploma supplement	Date	
Faculty	The faculty that the thesis is associated to	Text / ID	Stored list in the database

Business rules and access rights

- Student services clerks can insert and update data.
- Students insert data for their master thesis
- The mentor selected must confirm and accept the thesis.
- Bulk import should be provided for deployment and migration purposes.

1.12.18 Diploma thesis

Functionality

- **List:** Provide a list of all diploma theses submitted.
- **Search** for diploma thesis according to students, mentors, courses, names.
- **Maintain** the list of diploma theses.
- **Auditing:** All changes to diploma theses are logged.

Fields

Diploma thesis			
Field	Description	Type	Possible Values
Thesis Number	Code of the thesis	Text	
Name	Name of the thesis	Text	
Description	Description of the thesis	List	
Student	The student that applied with the master thesis	Text / ID	All students
Course	The course that the thesis is associated with	Text / ID	
Mentor	The mentor of the thesis	Text / ID	All teachers
Commission member 1	Member of the committee for thesis presentation	Text / ID	All teachers
Commission member 2	Member of the committee for thesis presentation	Text / ID	All teachers
Credits	ECTS credits earned with the thesis	Text	
Grade	Grade awarded	Number	
Application Date	Date of thesis application	Date	
Submission Date	Date of thesis submission	Date	
Presentation Date	Date of thesis presentation	Date	
Supplement	Code of diploma supplement	Text	
Supplement Date	Date of diploma supplement	Date	
Faculty	The faculty that the thesis is associated to	Text / ID	Stored list in the database

Business rules and access rights

- Student services clerks can insert and update data.
- Students insert data for their diploma thesis
- Constraints exist when applying for a diploma thesis
 - Selection of courses/mentors is limited to the ones taken by the student during studies
 - The credits sum must be sufficiently big for a diploma thesis to be applied (the number of credits is configurable per faculty / study program)
- The mentor selected must confirm and accept the thesis.
- Bulk import should be provided for deployment purposes.
- When the student applies for defending the diploma thesis, the system requires information from the library module if the student has returned all the books borrowed.

- The system sends information to the Library module that the student has graduated/ left the studies in order to deactivate its account.

1.12.19 Seminar thesis

Functionality

- **List:** Provide a list of all seminar theses submitted.
- **Search** for seminar thesis according to students, mentors, courses, names.
- **Maintain** the list of seminar theses.
- **Auditing:** All changes to seminar theses are logged.

Fields

Seminar thesis			
Field	Description	Type	Possible Values
ThesisNo	Code of the thesis	Text	
Name	Name of the thesis	Text	
Description	Description of the thesis	List	
Student	The student that applied with the master thesis	Text / ID	All students
Course	The course that the thesis is associated with	Text / ID	Student's courses
Mentor	The mentor of the thesis	Text / ID	All teachers
Credits	ECTS credits earned with the thesis	Text	
Grade	Grade awarded	Number	
Application Date	Date of thesis application	Date	
Submission Date	Date of thesis submission	Date	
Presentation Date	Date of thesis presentation	Date	
Faculty	The faculty that the session is associated to	Text / ID	Stored list in the database

Business rules and access rights

- Student services clerks can insert and update data.
- Students insert data for their seminar thesis
- Constraints exist when applying for a seminar thesis
 - Selection of courses/mentors is limited to the ones taken by the student during studies
- The mentor selected must confirm and accept the thesis.
- Bulk import should be provided for deployment purposes.

1.12.20 Class schedule

This entity contains data about class schedules.

Functionality


- **List:** Display the schedule in various formats:
 - Schedule for professor
 - Schedule for student.
 - Schedule for study program
 - Schedule for student group.
- **Collisions:** Display a list of all collisions for a schedule e.g. two classes are scheduled at the same time in the same classroom, a professor is scheduled to have two classes at the same time with two different student groups.
- **Search:** Search for classes by multiple criteria.
- **Add/Modify:** ACSS, professors or other users with access rights can modify.
- **Auditing:** All changes to schedule are logged.

Fields

Field	Description	Type	Possible Values
School year		Integer	2010, 2011, ...
Study year		Integer $\in \{0, 1, 2, 3, 4, 5\}$	
Semestar		Selection	Summer/Winter
Campus	Campus where lecture is held	ID	Master list of campuses
Faculty		ID	Master list of faculties
Study program		ID	Master list of study groups
Course		ID	Master list of courses
Professor		ID	Master list of teachers
Student Group	Students can be grouped in multiple groups.	Text	
Day	Day of the week	Int $\in \{0, 1, 2, 3, 4, 5, 6, 7\}$	
StartTime	Start time of class	Time	
Classroom	Classroom where class is held.	ID	Master list of classrooms
Status	Status of schedule	{InProgress, Locked}	

Business rules and access rights

- A student can view his schedule.
- ACSS or other users with access rights can modify the schedule.
- Professor can modify the schedule for his courses.
- If a schedule modification results in a collision (e.g. two classes at the same time in the same classroom), then a corresponding alarm is shown to the user.
- ACSS or other users with access rights can lock the schedule.
- A schedule can be modified if schedule's status is *InProgress*. If its status is *Locked*, then it cannot be modified.
- Upon locking a schedule, a notification containing the locked schedule is sent to the professor, all students registered in the student group, and SAO staff.

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1.12.21 Student groups

This entity contains data about student groups. Students attend classes in groups. According to the law, the maximum size of a student group is predetermined. It depends on the type of classes: lectures, lab exercises, tutoring etc. Additionally, the group size can be limited by the capacity of the classrooms. For elective subjects, the number and size of groups can also greatly vary depending on the popularity of courses. The system should provide automatic and manual distribution of students in predefined study groups.

Functionality

- **List:** Display the student group with all its attributes and students
- **Search:** Search for student groups by multiple criteria: campus, faculty, course, etc.
- **Add/Modify:** Professors can modify student groups.
- **Auditing:** All changes to student groups are logged.

Fields

Field	Description	Type	Possible Values
School year		Integer	2010, 2011, ...
Study year		Integer $\in \{0, 1, 2, 3, 4, 5\}$	
Semester		Selection	Summer/Winter
Campus	Campus	ID	Master list of campuses
Faculty		ID	Master list of faculties
Study program		ID	Master list of study groups
Course		ID	Master list of courses
{Student}	Students that make up the group.	ID	Master list of students

Business rules and access rights

- A student can view the groups he belongs to.
- Professor can view and modify the student groups for his courses.

1.12.22 Faculties

Functionality

- **List:** Provide a list of all faculties in the university.
- **Search** for faculties according to name.
- **Maintain** the list of faculties.
- **Auditing:** All changes to faculties are logged.

Fields

Faculties			
Field	Description	Type	Possible Values
Faculty name	The name of the faculty	Text	
Short name	Short name of the faculty	Text	

Address	Address of the faculty	Text	
Web URL	Website address	Text	

Business rules and access rights

- Administrator can insert and update all data.

1.12.23 Students sign-outs

Functionality

- **List:** Provide a list of all student sign-outs.
- **Search** for signed out students.
- **Maintain** the list of signed out students.
- **Auditing:** All changes to students are logged.

Fields

Student sign-outs			
Field	Description	Type	Possible Values
Student	The student that has signed out	Text / ID	All students
Date	The date the student has left the university	Date	
Document number	Code of the document	Text	

Business rules and access rights

- Students initiate the procedure for leaving the university
- Student services clerks can insert and update data.
- The system checks the library module for any books borrowed by the student to prevent leaving the university if the student has not returned all books.

1.12.24 Student remarks

Functionality

- **List:** Provide a list of all remarks for students.
- **Search** for remarks for students.
- **Maintain** the list of remarks for students.
- **Auditing:** All changes to remarks for students are logged.

Fields

Remarks for Students			
Field	Description	Type	Possible Values
Student	The student that the remark is for	Text / ID	All students

Date	Timestamp	Date	
Description	Description of the remark for the student	Text	

Business rules and access rights

Remarks are entered for students in special cases (when caught cheating, when special discounts are approved etc).

1.13 Master data

Master data consists of the following lists:

- List of faculties
- List of classrooms
- List of laboratories

This data changes very rarely. Still, there is a need for the data to be maintainable.

The list is maintainable by the System Administrator, as depicted in the following use case diagram (reproduced from the documentation on WP1.1):

