



SAPIENZA
UNIVERSITÀ DI ROMA

Course4U - Project Thesis

Human Computer Interaction

Faculty of Information Engineering, Informatics, and Statistics
Master Degree in Engineering in Computer Science

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1. Introduction

1.1 Project Idea

The main idea for the project consists of a system for accessing single University courses' detailed information, through a simple and intuitive user interface to ease the navigation and discovery of courses users may like and ultimately decide to enroll in.

1.1.1 Original project idea

The original project idea consisted of a system for searching and discovering Sapienza University courses using a “tag-based” system.

Courses' tags can be used to refine searches and get suggestions about courses that are in line with the user's interests.

Each course has associated information to let users discover its most important aspects: information include basic information (course name, curriculum and associated degree course, CFUs, academic year, semester, ecc...) and more in depth information (which may include a course description, associated tags, teachers, possible reviews by other users, ecc...).

The main idea revolves around Sapienza University courses, but could be expanded to courses offered by other universities.

1.1.1 Final implementation

Throughout the development of the project, the idea's main focus was retained, but also expanded towards a heavier reliance on the community (through the inclusion of user reviews and possible user suggestions for courses' information like courses' tags), and towards a broader audience (through the possible inclusion of information for courses from various universities).

We also introduced additional features to the already planned features of the original idea after the user requirements gathering phase of the development, such as course comparison, user login for managing courses to which users may be interested, and other features presented in the rest of this document.

We then refined our system as much as possible after hearing feedback from users through user-based evaluations of the existing features and of the system itself as a whole.

For the first working version of the system, which is the subject of this document, we restricted the scope of the system to include courses from Sapienza university, as for the original project idea, but made sure to take the scalability of the system into account by maintaining the database and its contained information, other than the system's interface and functionalities, as general and modular as possible.

1.2 Competitor Analysis

In this section we present some of the potential competitors we identified for our system.

The most relevant identified competitors are:

- Sapienza University Website
- Coursera
- Udemy
- Masterclass

For each competitor, we took into account the major advantages and disadvantages and summarized them in a table at the end of this section.

1.2.1 Sapienza University Website

Sapienza's course catalog page (<https://corsidilaurea.uniroma1.it/en>) is the official website used by La Sapienza for the search of information on the university's degree courses.

Advantages:

- possibility to use search filters based on general attributes (e.g. academic year, course type, faculty ecc.)
- it has the option to directly search for teachers
- wide selection of degree courses

Disadvantages:

- only allows to search for degree courses (no direct search for single courses is possible)
 - no way to directly compare courses
 - no reviews by other students for each course
-

1.2.2 Coursera

Coursera (<https://www.coursera.org>) is a website for both online and in-presence courses focused on career development, which offers single courses, degree courses and certifications, and is often used by companies for employees training courses.

Advantages:

- detailed search filters for courses
- dedicated sections for frequently asked questions and user reviews
- wide variety of online courses and degrees
- collaboration with many universities and companies
- possibility to buy and watch online courses' lessons directly on the site

Disadvantages:

- courses' heterogeneity makes it difficult to compare them
- many features locked by registration

1.2.3 Udemy

Udemy (<https://www.udemy.com/>) is a platform dedicated to the discovery of online courses taught by other users, who are allowed to publish their own courses in the form of video lessons which can be streamed directly on the Udemy website.

Advantages:

- detailed search filters for courses
- suggested courses based on personal interests
- possibility to buy and watch online courses' lessons directly on the site
- possibility to publish own courses as a teacher
- extensive use and support of user reviews

Disadvantages:

- online courses can be “unofficial”
- courses' heterogeneity makes it difficult to compare them
- many features locked by registration

1.2.4 Masterclass

Masterclass (<https://www.masterclass.com/>) is a platform for streaming online courses which allows users to watch and listen to video lessons taught by professionals and field experts selected by the Masterclass' staff.

Advantages:

- online courses taught by professionals and globally recognized experts
- it has the option to directly search for teachers
- possibility to purchase a subscription and access a wide catalog of courses

Disadvantages:

- poor search features (only allows to search for topics)
- many features locked by registration
- no possibility to compare courses

1.2.5 Competitors Comparison Table

In the following table we summarize the features of the various competitors and also include the possible features that our system would have.

	Sapienza's Website	Coursera	Udemy	Masterclass	Course4U
Accredited Courses	YES	YES	NO	NO	YES
Search Courses by Topics	NO	YES	YES	YES	YES
Search Teachers	YES	NO	NO	YES	NO ⁽¹⁾
Advanced Search	NO	YES	YES	NO	YES
Buy Courses	NO	YES	YES	YES	NO ⁽²⁾
F.A.Q.	NO	YES	NO	NO	NO ⁽³⁾
Users Reviews	NO	YES	YES	NO	YES
Compare Courses	NO	NO	NO	NO	YES

Competitors comparison table notes:

- 1) Our system focuses on courses and on the search for courses' information, not on teachers' information.
- 2) The courses included in our system are offered by their respective universities, we do not include the possibility to enroll or buy courses directly from our system.
- 3) Although useful and helpful, frequently asked questions are hard to maintain and update by a third party system which has no way of letting the teachers of the courses themselves provide answers to said questions.
Furthermore, even a possible implementation of community based answers to the frequently asked questions of each course is made difficult by the fact that university courses may change teachers, program, material, assessments methods and other information up to one time a year.

2. User Requirements Analysis

In this section we present the possible characteristics of the users of our system, as well as some examples of its practical uses and scenarios.

2.1 User Profile

The potential users of our system are people with the following characteristics:

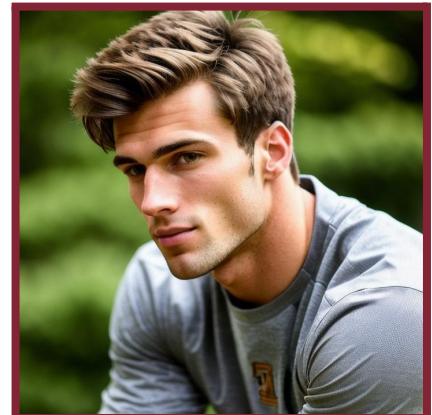
- Age: 18 - 55
- Gender: Any
- Education: high school diploma / university degree
- Occupation: university student / worker
- Location: Italy / World
- Technology: smartphone or pc familiarity

2.2 Personas and Scenarios

2.2.1 Persona 1 - Sapienza University Student

Persona: Luca

Luca is a 23-year-old master's degree student in Computer Science at Sapienza University. He lives in Tivoli, near Rome, and commutes by train daily to attend his classes. He recently completed his bachelor's degree amidst the COVID-19 pandemic, which impacted his personal life and university journey: it led to unexpected academic setbacks and left him feeling disheartened about his free choice course selections during his bachelor's degree. With the new academic cycle starting, he is determined to make better-informed choices for his degree courses based on his interests and career goals.



Scenario (Luca):

It's a Sunday evening in October, and Luca is at home in Tivoli, reviewing the course catalog for the upcoming semester of his master's degree programme.

By reflecting on his past experience of selecting free choice courses in his bachelor's degree, Luca acknowledges that he made some missteps, choosing courses for which he was not completely satisfied.

Determined not to repeat those mistakes, Luca has set a clear goal for himself in this new academic cycle: to select free choice courses that will equip him with the skills necessary for his desired career path.

Luca seeks a platform or system that can assist him in navigating the wide range of available courses to find the ones that mostly align with his interests.

2.2.2 Persona 2 - Worker

Persona: Alice

Alice is a 34-year-old nurse working at Policlinico Umberto I in Rome.



She has been working as a nurse for several years and she is passionate about providing the best care to her patients and seeking opportunities to enhance her knowledge and skills.

As a healthcare professional, Alice understands the importance of maintaining her Continuing Medical Education (CME) credits to stay up to date with the latest advancements in nursing practices and also meet the requirements of her job. She is committed to lifelong learning and actively seeks out educational opportunities that align with her interests and professional goals.

Scenario (Alice):

Alice is in the process of fulfilling her Continuing Medical Education (CME) requirements for her job at Policlinico Umberto I. She needs to earn the remaining credits before her CME cycle ends. As a busy nurse with long shifts, finding time to attend in-person workshops or seminars can be challenging.

It is a spring morning, and Alice is looking forward to finding flexible online courses that allow her to earn CME credits at her own pace, ideally through a user-friendly platform or resource that can provide comprehensive course's information.

She wants to make the most of her CME journey to further develop her skills, expand her knowledge, and provide the best care possible to her patients.

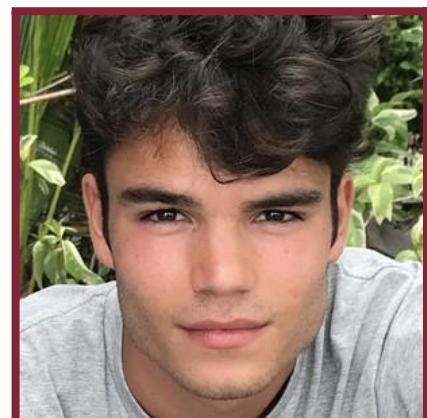
2.2.3 Persona 3 - Erasmus Student

Persona: Rafael

Rafael is a 20-year-old Erasmus student from Spain. He is currently studying Energy Engineering at the Technical University of Madrid.

Rafael has been accepted into the Erasmus program at Sapienza University in Rome.

He is a dedicated and ambitious individual who is passionate about sustainable energy solutions and environmental conservation. He believes that his Erasmus experience at Sapienza will provide him with invaluable insights into renewable energy technologies and allow him to broaden his global perspective.



Scenario (Rafael):

Rafael is in the final stages of preparing for his Erasmus program in Rome. As he makes arrangements for his travel and accommodation, he also needs to select the courses he will take during his semester at Sapienza University.

By carefully selecting his courses before his arrival in Rome, Rafael aims to make the most of his time abroad, gain expertise in his field of study, and connect with like-minded individuals who share his passion for sustainable energy.

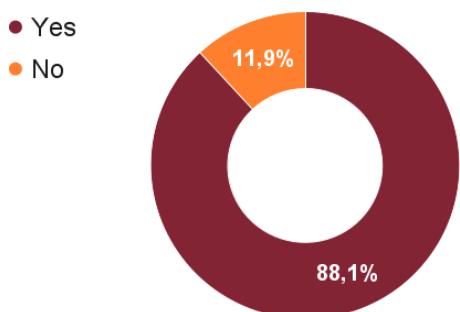
Given his limited familiarity with Sapienza University's academic structure and course offerings, Rafael is looking for a user-friendly platform that enables him to search for courses based on his interests and access detailed course descriptions.

2.3 Questionnaires

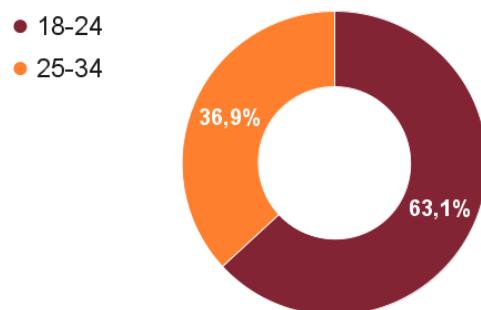
This section presents the results of the questionnaires that were distributed to our potential users. We collected data by submitting our questionnaires through google forms over Telegram groups, Whatsapp groups and Discord channels.

We received 84 total responses, the following graphs summarize all the received answers.

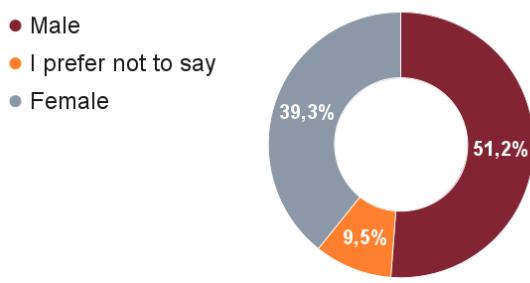
Are you a university student?



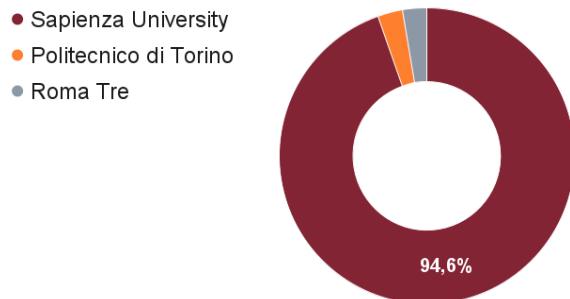
What is your age?



What is your gender?

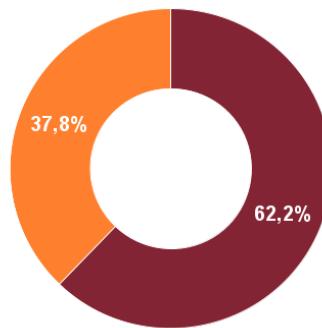


What is your current university?

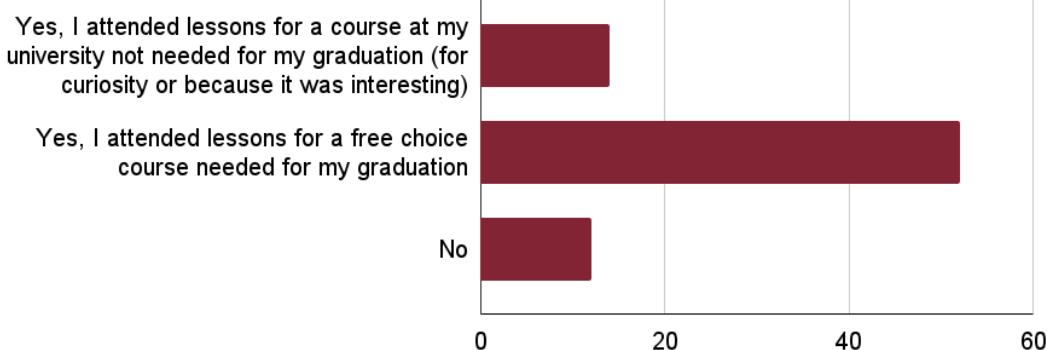


What is your current role or status at the university?

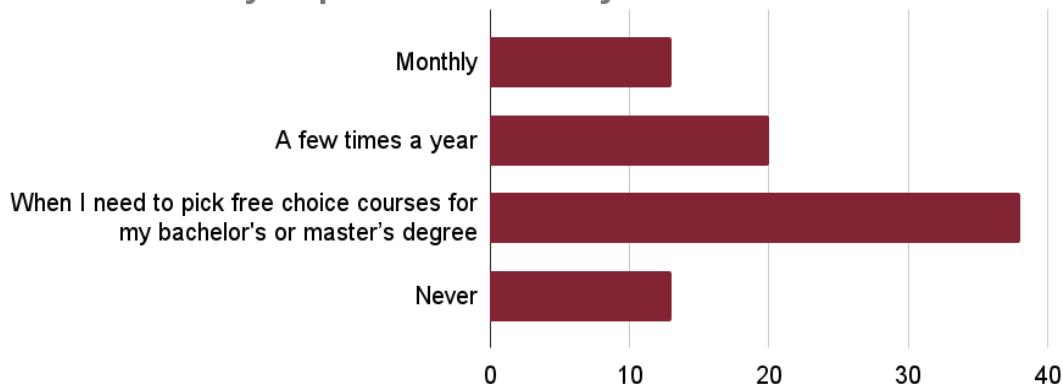
- Graduate student
- Undergraduate student



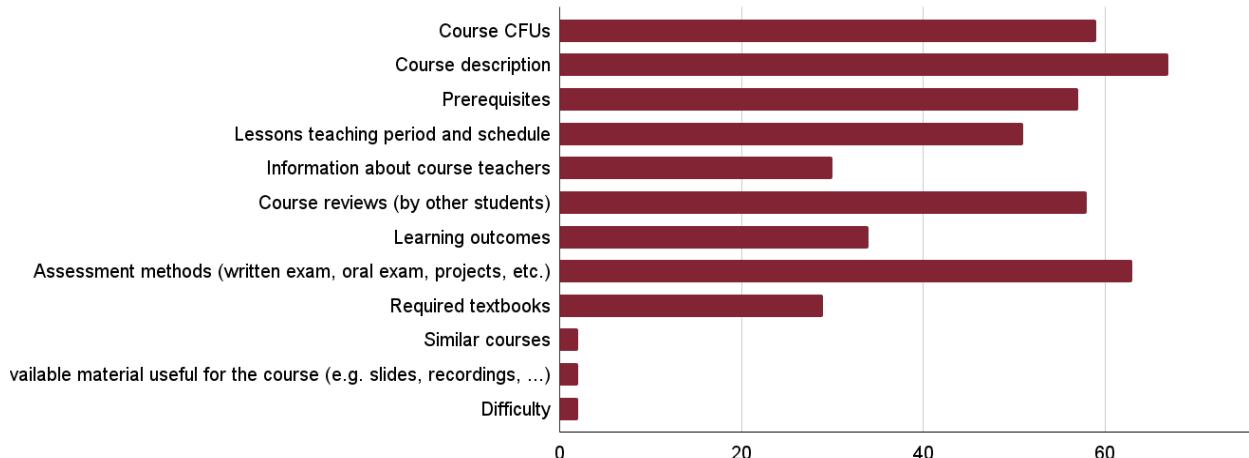
Have you ever chosen a specific course to follow outside mandatory courses for your bachelor's or master's degree?



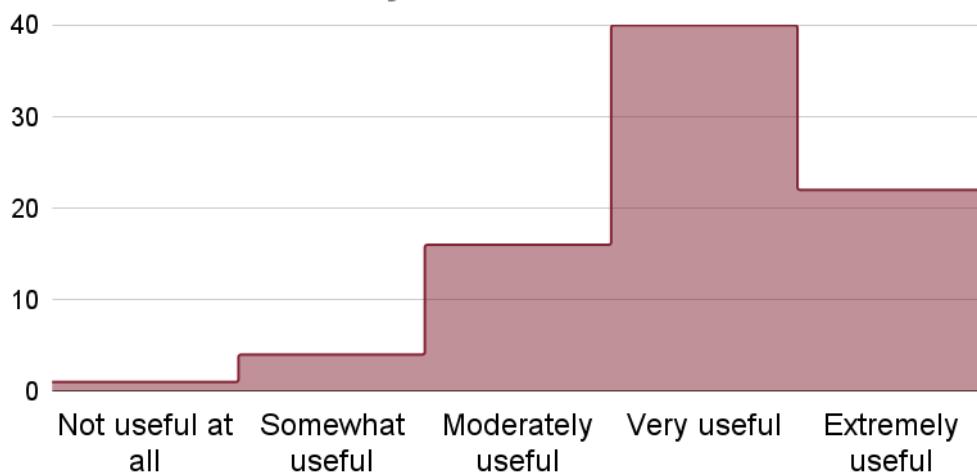
How frequently do you search for or explore new courses offered by Sapienza University or other universities?



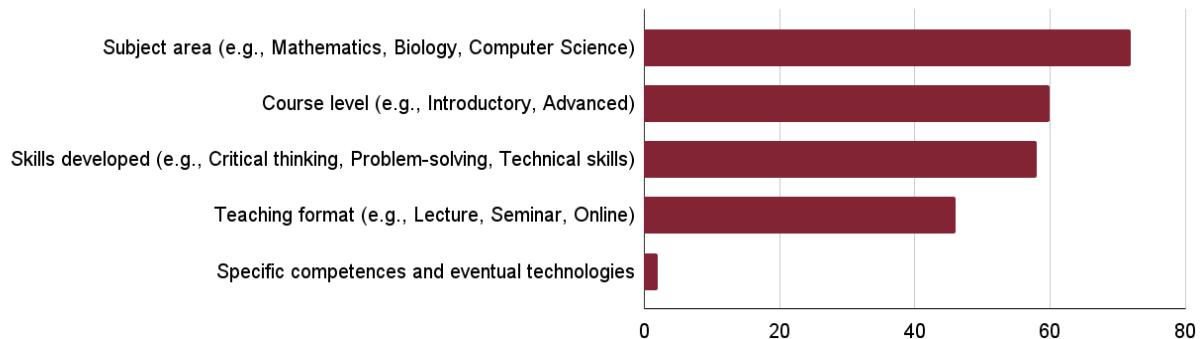
What set of information do you think is important to be shown when searching for a course?



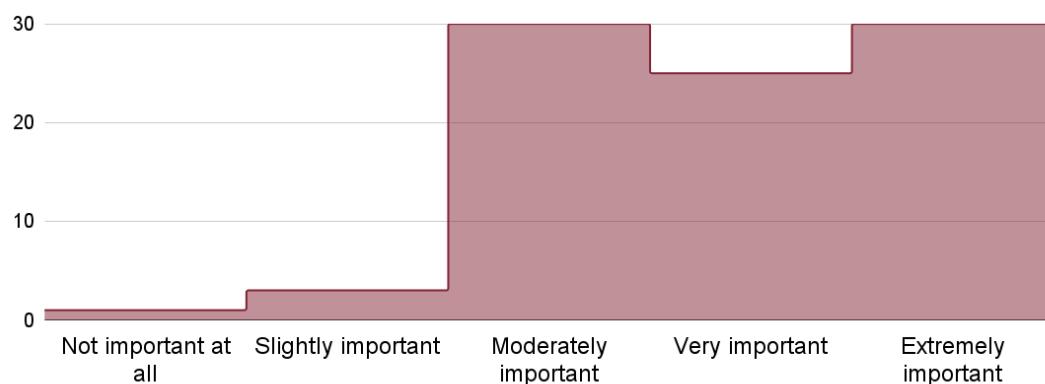
How useful would it be to search for a course primarily based on your interests and in line with your career?



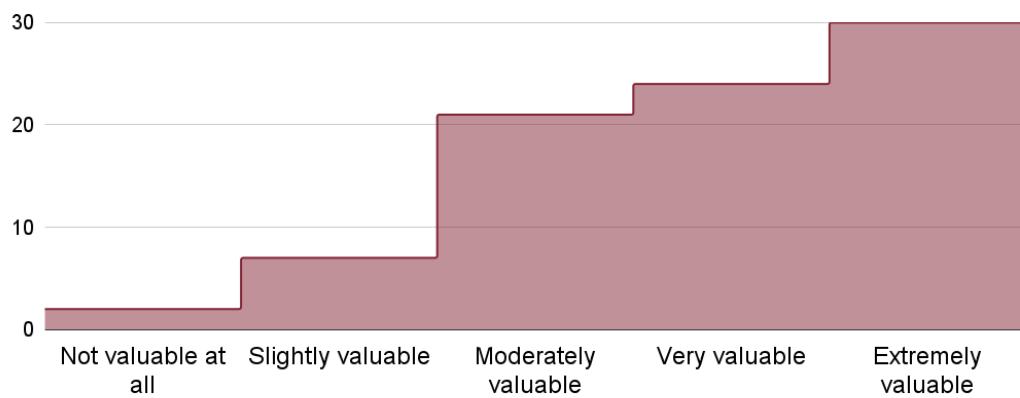
In a system which allows to search for courses based on their tags (e.g. subject areas, keywords, topics, etc.), which kind of tags do you think would be useful?



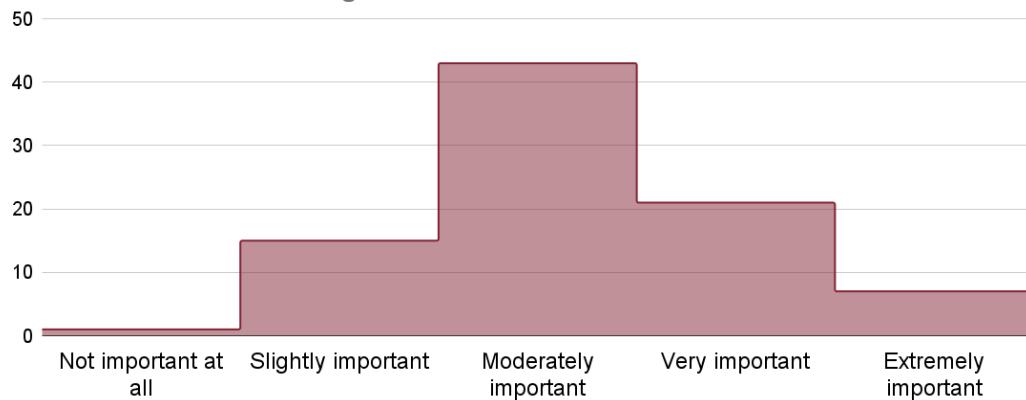
How important are reviews on a particular course (e.g. anonymous reviews or recommendations from other students)?

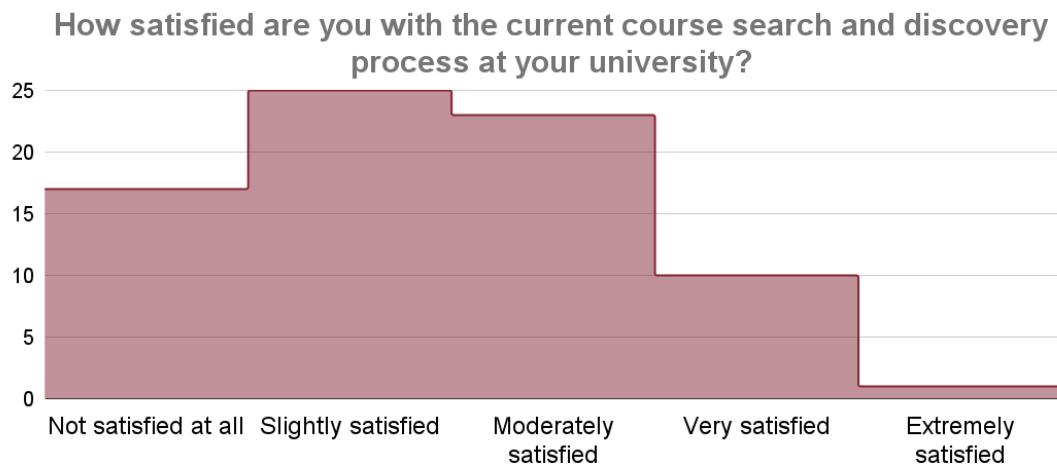


How much do you value accessing course materials (course slides and teaching material, books, online lessons recordings, etc.) before enrolling in a course?

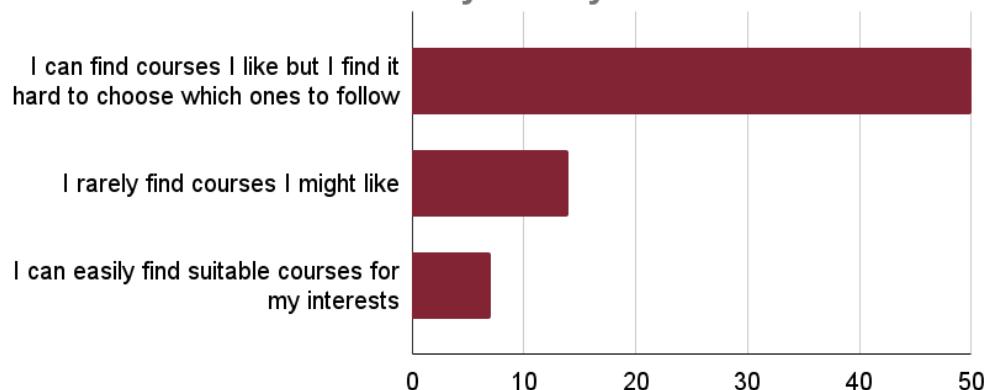


How important would it be for you to have the ability to save, bookmark or flag courses for future reference?

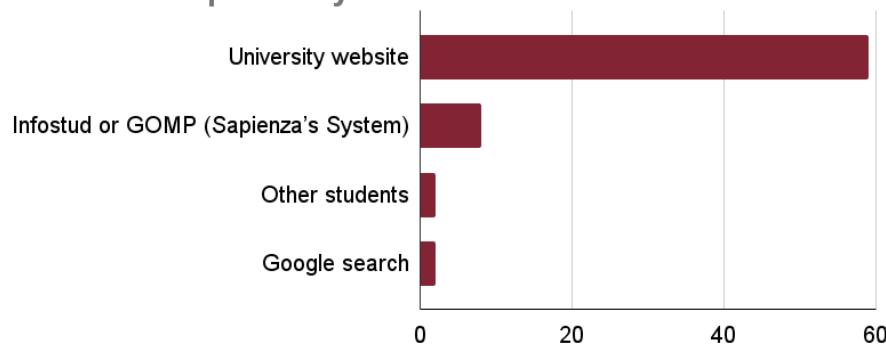




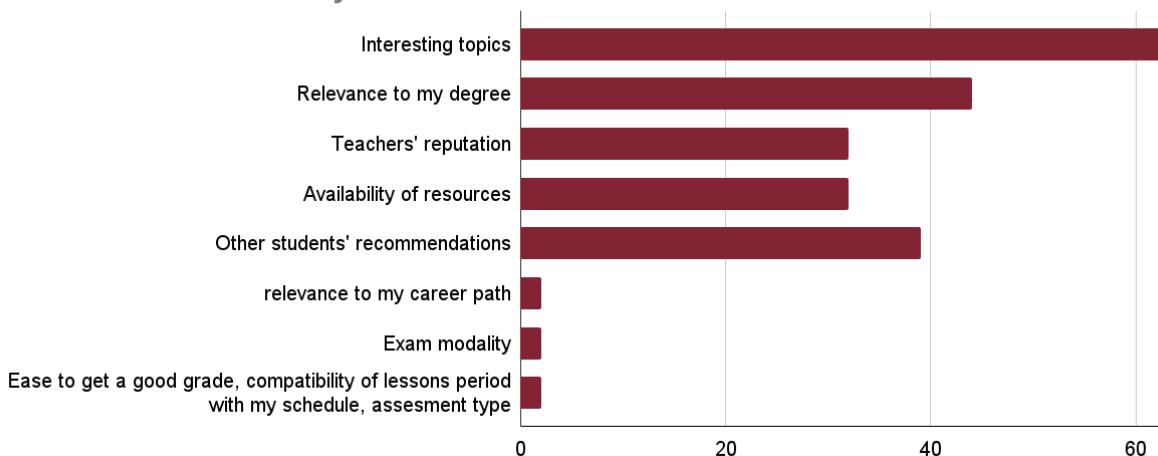
How would you describe your experience in finding courses you may like?



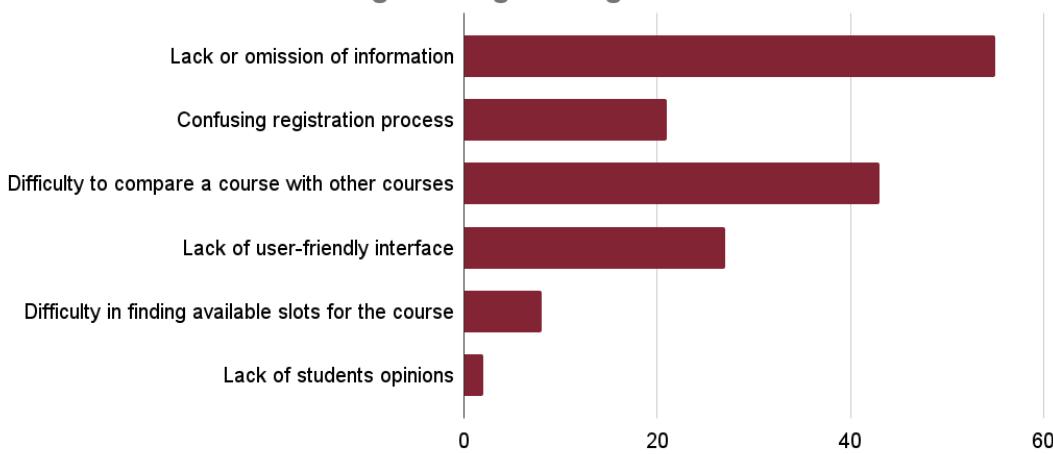
When searching for new courses, where do you primarily access information?



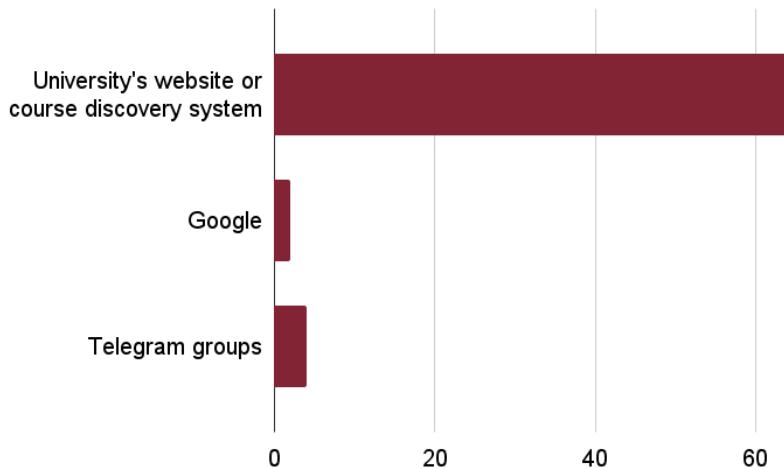
What factors influence your choice for a certain course in favor of other courses?



Are there any specific challenges or pain points you experience when searching and registering for courses?



What kind of course discovery platforms have you used in the past?



Analyzing the answers collected with the questionnaires, we can summarize the results as follows:

- the majority of the people who submitted an answer to our questionnaire are graduated students from Sapienza University, with an age between 18 and 24;
- similarly, the majority of the users chose to follow at least one course outside of mandatory courses, either because it was required by their study plan or because they felt it had an additional value for them;
- most of the users search for university courses only when strictly required and not on a regular basis;
- the four most popular answers for what is important to be shown when searching for a course are, in order: course description, assessment methods, courses' CFUs and user reviews;
- when searching for courses, users focus on the relevance to their career path and degree;
- a large group of users think that being able to bookmark a course for future reference is moderately important;
- most users are not very satisfied with the course search system at their university, mainly because they cannot decide which courses to follow from the ones found, they cannot compare them, and cannot find all information they need for the course;
- users pick their courses based primarily on: interesting topics, relevance to their degree and other students' recommendations.

It is clear from the received answers that the users would like to have an improved system for searching university courses and they really value other students' reviews and opinions.

Moreover, they would like the system to include options for easily comparing courses and bookmarking them for a later time.

2.4 Interviews

Other than user questionnaires, we also conducted interviews with people fitting our ideal user's profile. The goal of our interviews was to become more aware of specific users' needs. Interviews started from general questions about a potential system to search and compare courses and later dug deeper into additional aspects and details not covered in the user questionnaires.

We explicitly asked our interviewees if they would find a tag-based system to search for courses useful and whether they would be likely to trust online reviews in such a system. Moreover, we asked whether they would prefer a mobile version or a desktop version for this kind of system. Finally, if the interviewees were comfortable answering more personal questions, we asked if they ever followed free-choice university courses that did not fully satisfy their expectations.

2.4.1 Interview #1

We interviewed Marco, a 23-year-old student pursuing a Master's degree in Electronics Engineering. Marco shared that his primary challenges in locating appropriate courses over the past years were primarily attributed to the university's lack of a transparent registration process and the absence of comprehensive syllabus details for the current year. During his second year of Bachelor's studies, he recounted an instance where he enrolled in a course with vague objectives, ultimately leading him to withdraw due to misalignment with his expectations.

Additionally, Marco highlighted his persistent efforts to identify courses with specific attributes, such as CFUs, language of instruction and covered subjects. He pointed out that other kinds of discovery platforms often feature dedicated sections for more comprehensive information, leaving him wondering why his university's website lacks such functionality.

Marco put forward the idea of integrating a specialized section within the system, aimed at providing comprehensive information about each course, encompassing lecture schedules and well-defined prerequisites. He also suggested implementing an advanced search feature for finer-grained searches.

2.4.2 Interview #2

We conducted an interview with Modesta, a 54-year-old midwife working at San Giovanni Evangelista hospital in Tivoli (near Rome). She shared her experiences and challenges in finding suitable courses to fulfill her Continuing Medical Education (CME) credits, which often involves manually browsing multiple websites and platforms, leading to a time-consuming and inefficient search.

During our discussion, Modesta expressed her enthusiasm for a system that could provide all the necessary information for discovering university courses in one place, making it easier to evaluate the relevance and suitability of each course.

In particular, Modesta emphasized the significance of a tag-based system for course searches. She explained that the ability to search for courses based on specific tags, such as subject areas, keywords, or topics, would greatly enhance the efficiency of the course discovery process. Modesta also highlighted the potential of a recommendation system based on the user's favorite tags, which could provide personalized course suggestions aligned with their interests and career aspirations.

Modesta suggested adding the possibility, for users of the system, to provide additional tags for a specific course to be added to that course's tag list, in order to help other users searching for courses based on community-defined tags.

2.4.3 Interview #3

We interviewed Laura, a 21-year-old student pursuing a degree in Computer Science at Sapienza University in Rome. During the interview, Laura expressed her frustrations with the current course search process, particularly when it comes to comparing different courses. She highlighted the challenges she faces when trying to differentiate between courses that share similar names but have different content, or courses with different names but similar subject matter.

Laura explained that the absence of a direct comparison feature makes it difficult for her to make informed decisions. She often finds herself spending a significant amount of time manually searching for course details and cross-referencing multiple sources to gather comprehensive information about each course.

She emphasized the importance of having a course search system that offers consistent and structured information about course content, prerequisites, learning outcomes, and assessment methods.

Laura suggested that the system could benefit from a side-by-side comparison feature, allowing users to compare multiple courses simultaneously, enabling them to make more accurate and efficient decisions.

2.4.4 Interview #4

During our interview with Simone, a 27 years old ex-Sapienza student with a master degree in Mechanical Engineering at Sapienza University, he shared his perspective on the importance of reviews and recommendations by other students for specific courses he is interested in.

During his student years, Simone actively participated in Telegram student groups related to specific courses, which serve as platforms for open discussions and information sharing. He often asked questions about the quality of a course, the effectiveness of the teaching, and other relevant details to other students in those groups. This allowed Simone to gain additional insights that supplement the official course descriptions and helped him make more informed choices.

However, Simone also acknowledged some challenges he encountered when seeking information in these Telegram groups. One notable challenge is the lack of immediate responses from other students, which often delayed his decision-making process.

Additionally, Simone noted that similar questions were frequently asked by different students, resulting in repetitive responses and relevant messages about course recommendations getting buried within the group's message history.

Simone expressed his approval for the idea of having a dedicated webpage that consolidates course recommendations and reviews from fellow students, which would eliminate the need to navigate through multiple channels or sift through numerous messages in student groups.

2.4.5 Conclusions from Interviews

With the data we collected from the interviews, it was clear that the system should be implemented as a desktop application (since users would mainly use such a system from a PC). Additionally, a section suitable for comparing courses was highly requested, confirming the results we obtained with the questionnaires.

Although some of the interviewed people expressed that they wouldn't fully trust what other users may have written in their reviews, preferring to directly confront teachers and other students, the majority of them think that reviews for courses are an important addition to such a system.

Finally, an advanced and detailed course search feature should be implemented in place of a simple name and/or associated degree course based search.

3. Task Analysis

After the requirements gathering phase, we need to organize data into fitting diagrams. Hierarchical Task Analysis (HTA) is a task description method, used to produce an exhaustive description of tasks in a hierarchical structure for goals, sub-goals, operations and plans.

In the HTA model, tasks are broken down into progressively smaller units.

On the other hand, a state transition network (STN) is a diagram consisting of a directed graph, with nodes representing system states and directed edges representing the transition from one of the system's states to another, also including user actions and system responses.

In this section we present the major tasks we identified for our system: for each of them, we present how the task has been decomposed in their HTA diagrams and how the system behavior changes in the STN diagrams.

The analyzed tasks are:

- View Course (access a certain course's information page)
- Authenticate User (sign in and log in for users)
- Write Review (insert a review for a certain course)
- Compare Courses (compare 2 or more courses' information in a dedicated page of the system's website)

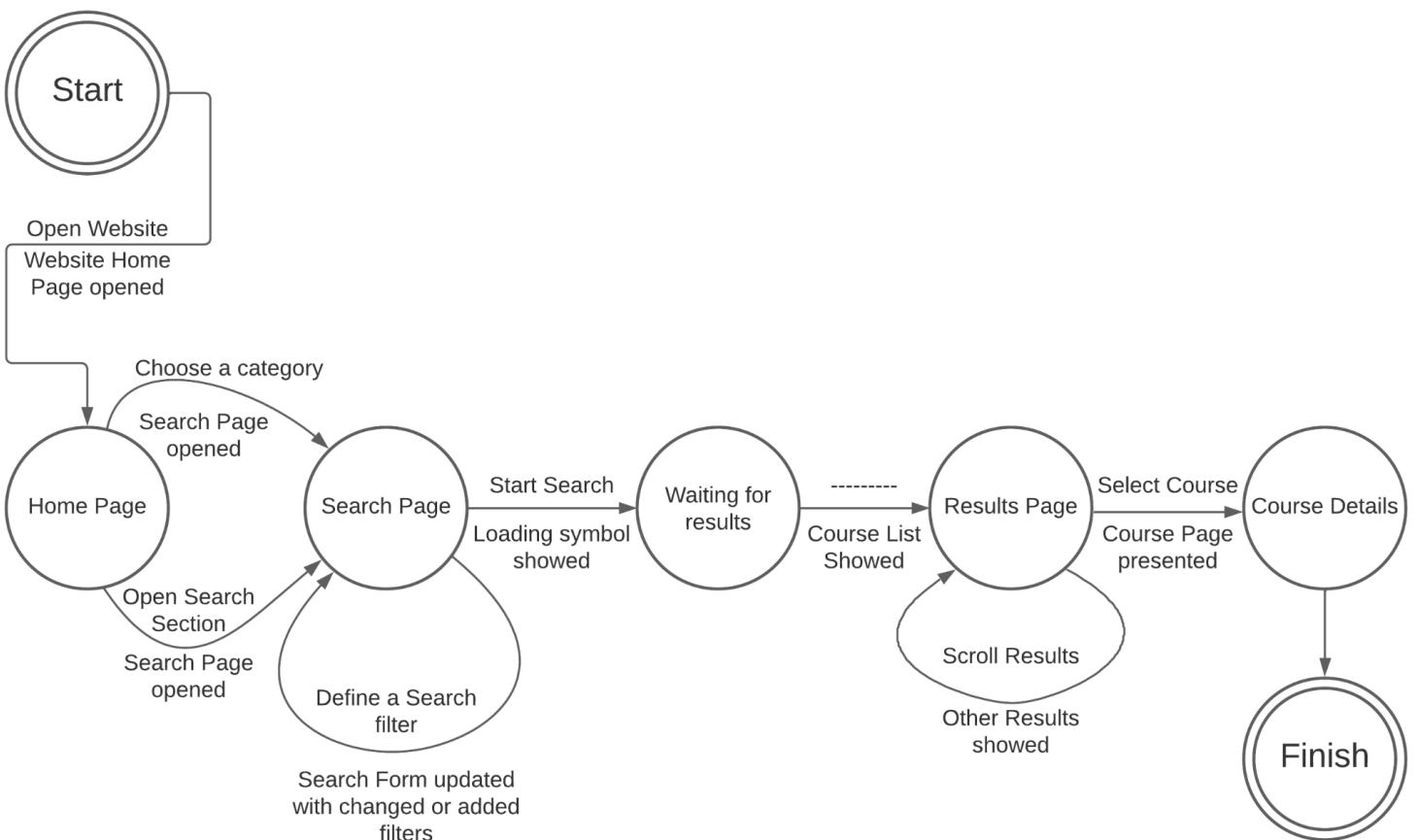
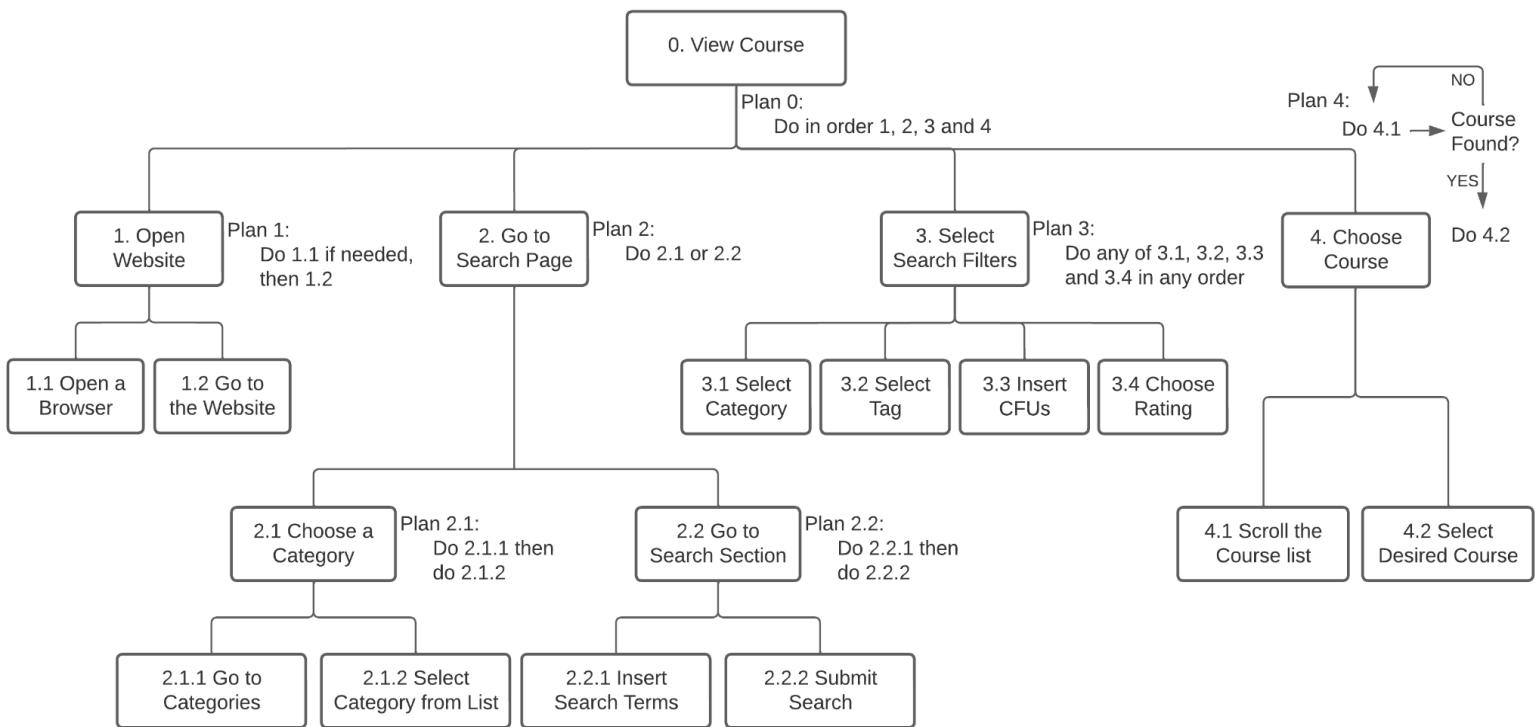
For the STNs we only included forward transitions, while transitions for escape actions (for example going back to the home page from the current page) were not inserted and should only be included in a higher level diagram.

The same reasoning applies to other menu options like the help menus, always available to the user (through the use, for example, of a menu / navigation bar on top of each page of the system's website).

3.1 View Course

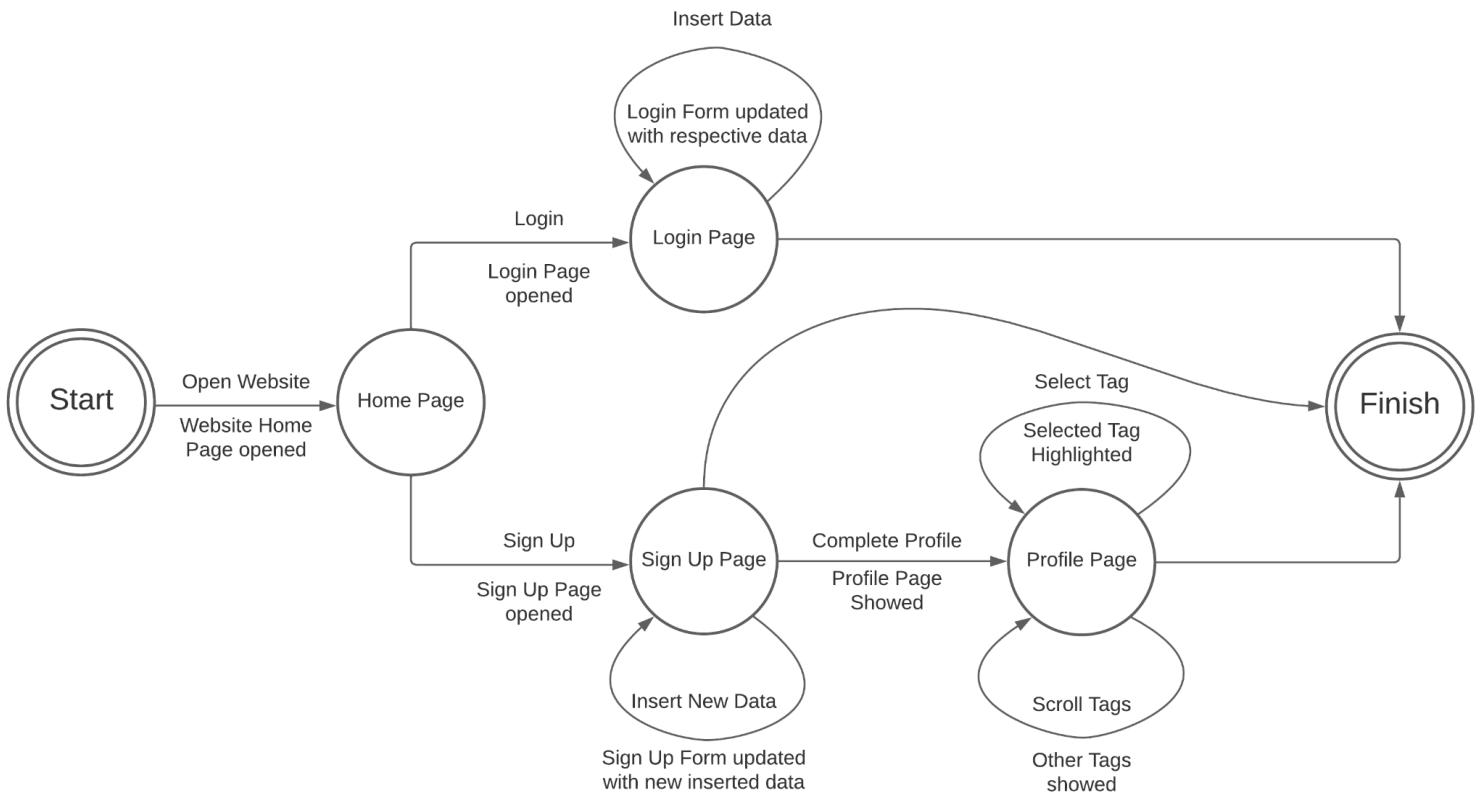
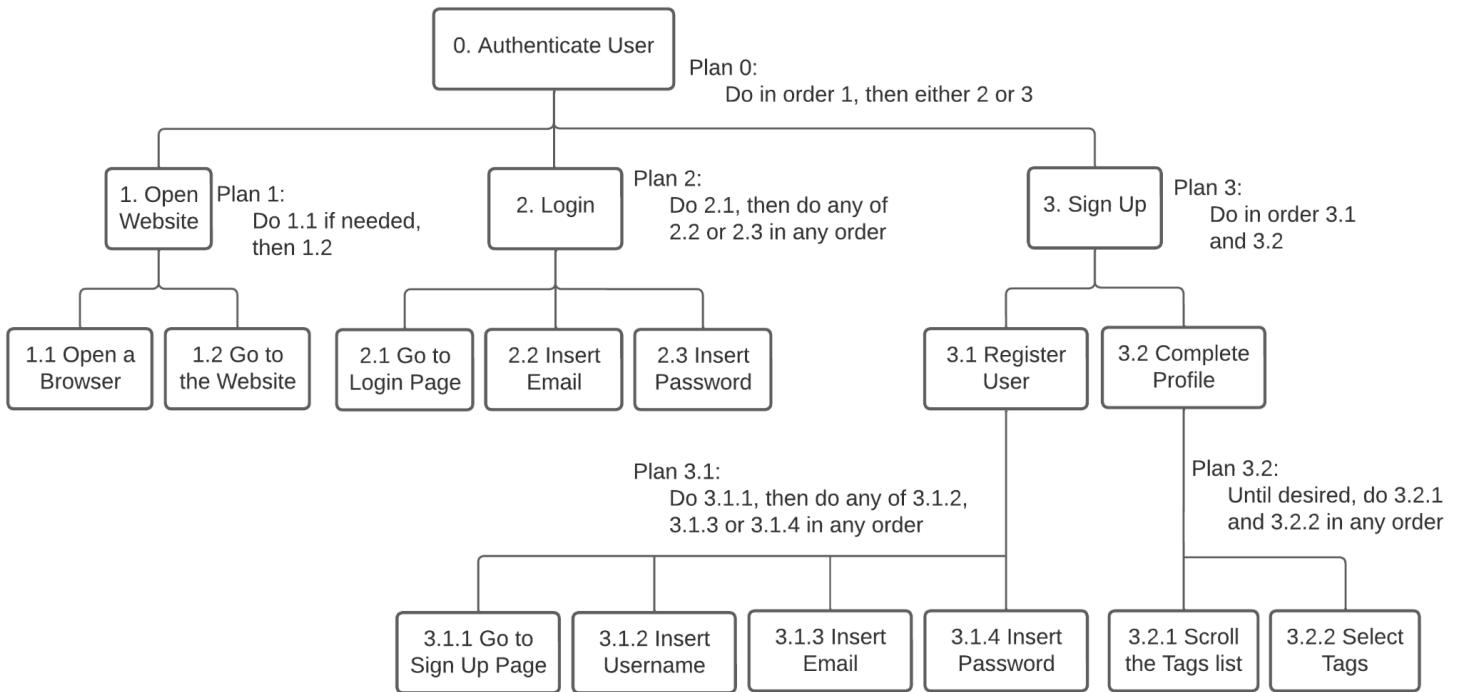
In order for the user to access information for a course, after first landing on the website's home page, he has to navigate to the search page by either inserting the search terms in the home page's search bar or by choosing a specific category from the home page itself. At this point, the user can select or insert its desired search filters.

The user can now scroll through the search results and choose the course for which he wants to access detailed information.



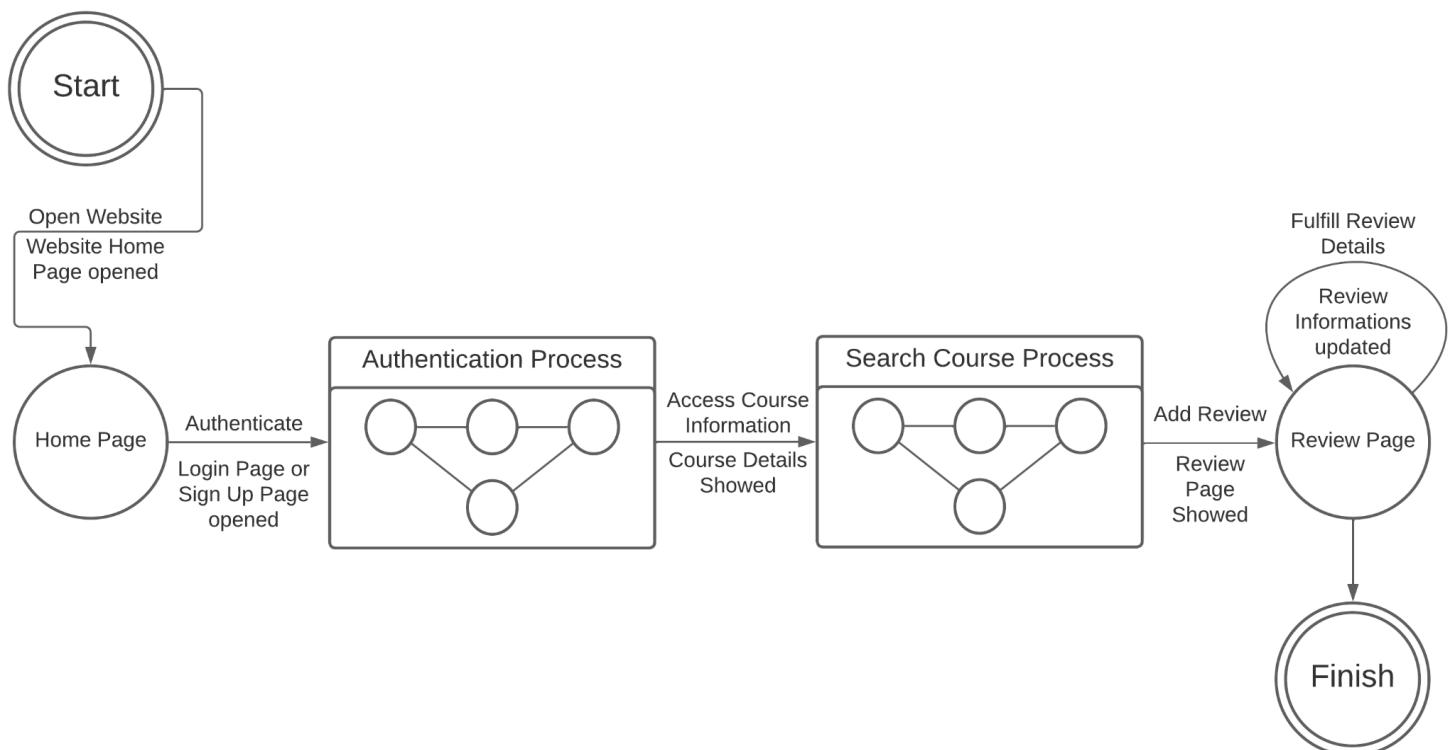
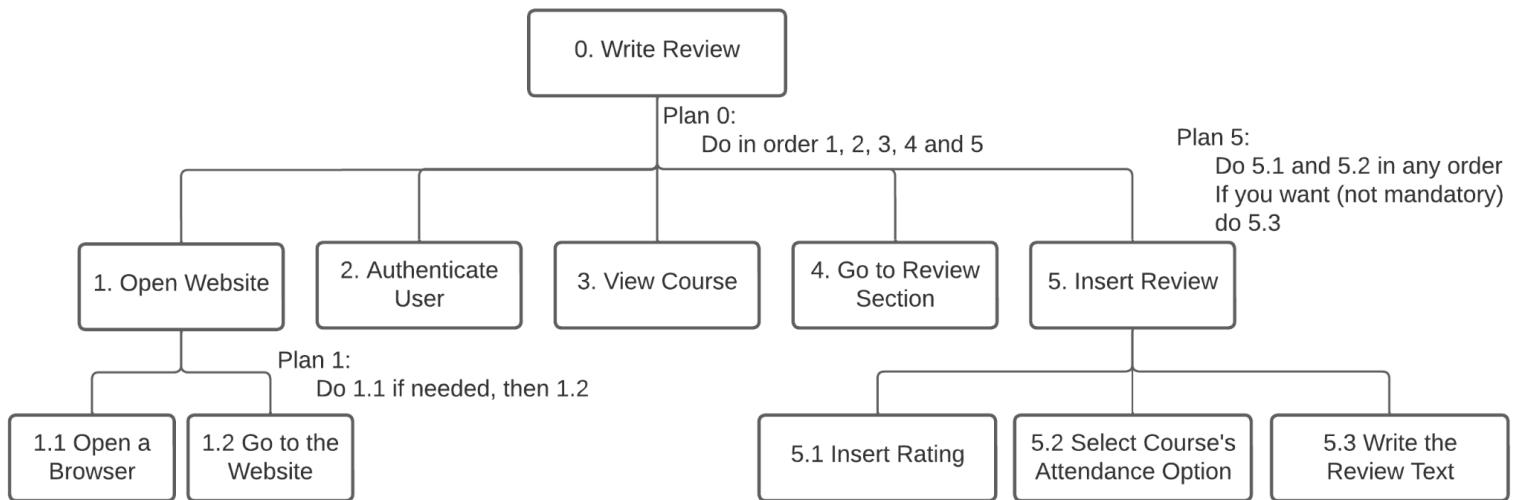
3.2 Authenticate User

The user can authenticate by either performing the login (inserting the required fields) or by signing up before logging in. When signing up, the user has to register a new profile (by inserting the required information) and then optionally complete his profile by selecting any number of tags and topics he may be interested in.



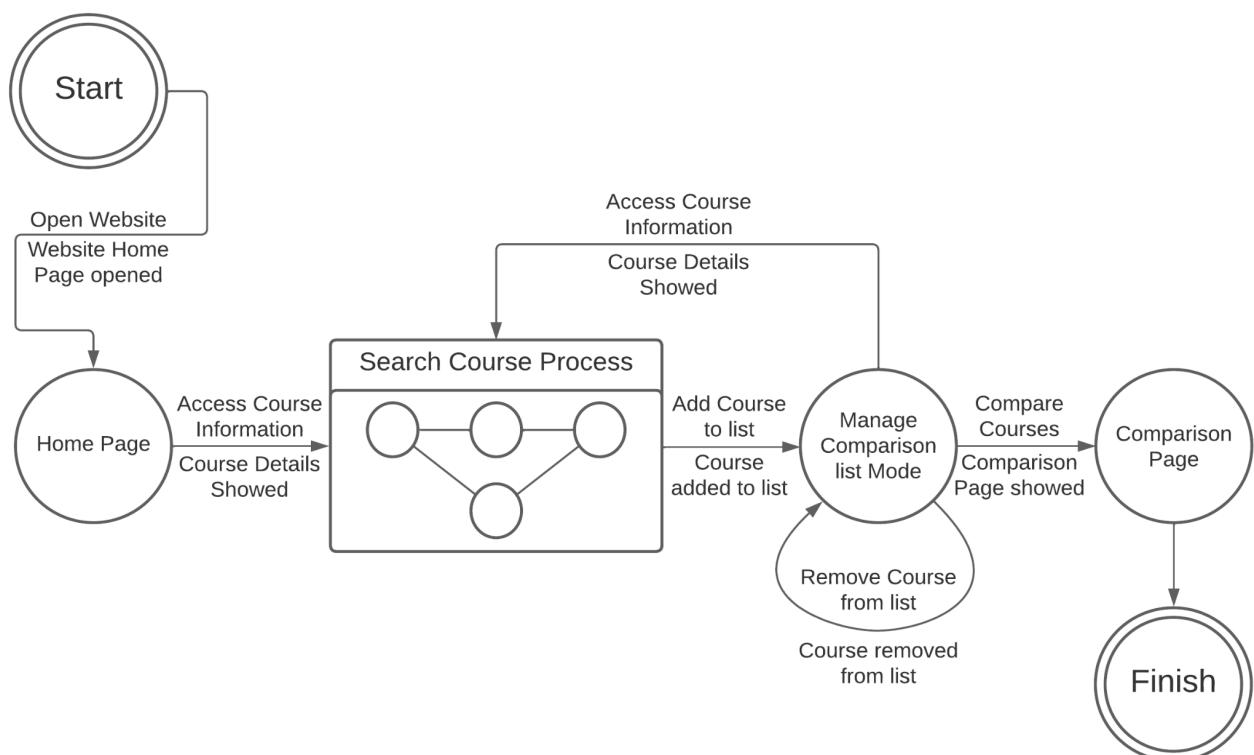
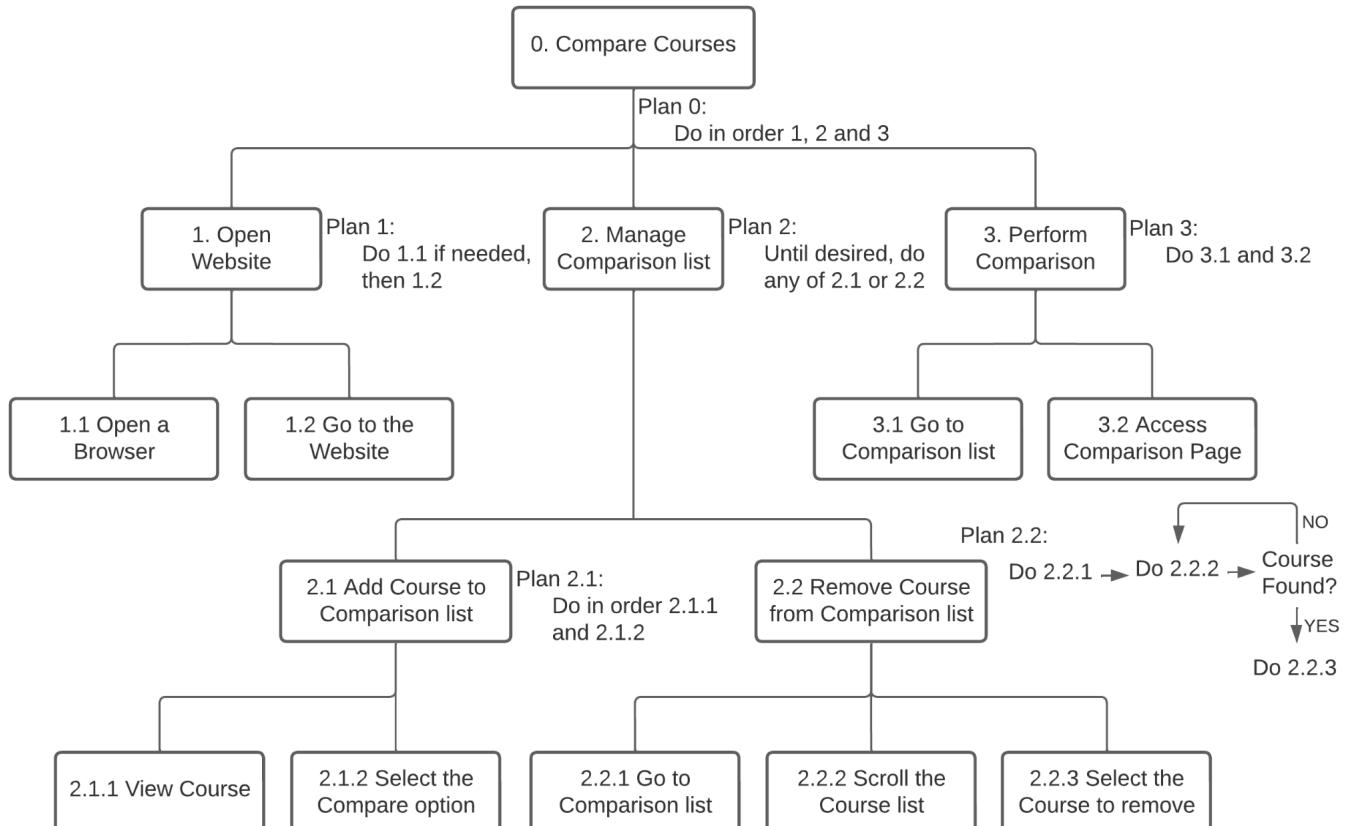
3.3 Write Review

The user can write a review for a course by first authenticating and then going to a course's information page. He can later go to the review section and leave a review on the website by inserting the appropriate information. The authentication and viewing of a course's details are defined in the previously described tasks.



3.4 Compare Courses

The user can compare multiple courses by first creating a comparison list and then accessing the dedicated comparison page. The list can be managed by adding courses to it from the corresponding course's page or by removing courses from it.



4. Prototype 1

In this section we present the mockups of the first prototype of our system. The system design was realized by taking into account both the original final system's vision as well as the most important features, requests and user needs that emerged from the questionnaire and the interviews conducted during the requirements gathering phase.

The mockups of the system's website contains the following (in order).

- Page 1) Home Page (user not logged)
Contains the home page of the website for when the user did not yet login
- Page 2) Login Page
- Page 3) Sign Up Page 1 (user registration)
- Page 4) Sign Up Page 2 (complete user profile)
- Page 5) Home Page (user logged in)
This version of the home page contains an additional section with suggested courses to the user based on its interests.
- Page 6) User Profile Page
- Page 7) Search page (which is also the redirect page when the user clicks on a tag or a category on the website, which leads to the search page having the clicked tag or category selected in the filters on the left side)
- Page 8) Course's information page (page accessed when a course "card" is clicked)
- Page 9 to 13) Course comparison page, showing different numbers of courses added to the comparison (from 1 course to 3 courses), and showing different visualizations of the comparison section for when the user scrolls using the horizontal scrollbar.
- Page 14, 15, 16) Search page showing the comparison list on top of the page (for when one or more courses where added in the comparison list by clicking on the corresponding button in each courses page)
- Page 17, 18, 19) Course's information page showing the comparison list on top of the page (as before).

The mockups were made interactive, hence clicking on various buttons and sections in each PDF page redirects to other pages in the PDF based on the clicked element.

The interactive version of the mockups (not included in this document) simulates user actions and system responses for user login and registration, exploration of categories and courses, selection of user favorite tags, addition of courses to user's favorite list or bookmark list, change language, visit user profile and add a review for a course.

The following pages of this document contain the main mockups of the system designed using "Adobe Illustrator" and made interactive through the use of "Adobe InDesign" (page layout designing programs, part of the Adobe "Creative Cloud" suite).

Suggested Courses

Course Name Which May Be Too Long : ☰

Degree Course Name

[Tag Name](#) [Another Tag Name](#) [Yet Another Tag Name](#) [Yet Another](#) >

3.2 ★★★☆☆ (742) 6 CFU | September - December | 60 hours

Description: The course of Course Name focuses on lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim ven... [Read More](#)

Course Name Which May Be Too Long : ☰

Degree Course Name

[Tag Name](#) [Another Tag Name](#) [Yet Another Tag Name](#)

3.2 ★★★☆☆ (742) 6 CFU | September - December | 45 hours

Description: The course of Course Name focuses on lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim ven... [Read More](#)

Course Name Which May Be Too Long : ☰

Degree Course Name

[Tag Name](#) [Another Tag Name](#) [Yet Another Tag Name](#)

3.2 ★★★☆☆ (742) 6 CFU | March - May | 45 hours

Description: The course of Course Name focuses on lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim ven... [Read More](#)

Course Name Which May Be Too Long : ☰

Degree Course Name

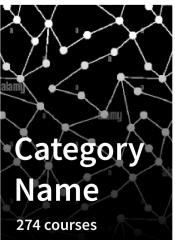
[Tag Name](#) [Another Tag Name](#) [Yet Another Tag Name](#) [Yet Another](#) >

3.2 ★★★☆☆ (742) 6 CFU | March - May | 60 hours

Description: The course of Course Name focuses on lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim ven... [Read More](#)

[Explore all suggested courses >](#)

Course Categories



Popular Courses

Course Name Which May Be Too Long : ☰

Degree Course Name

[Tag Name](#) [Another Tag Name](#) [Yet Another Tag Name](#) [Yet Another](#) >

3.2 ★★★☆☆ (742) 6 CFU | September - December | 60 hours

Description: The course of Course Name focuses on lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim ven... [Read More](#)

Course Name Which May Be Too Long : ☰

Degree Course Name

[Tag Name](#) [Another Tag Name](#) [Yet Another Tag Name](#)

3.2 ★★★☆☆ (742) 6 CFU | September - December | 45 hours

Description: The course of Course Name focuses on lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim ven... [Read More](#)

Course Name Which May Be Too Long : ☰

Degree Course Name

[Tag Name](#) [Another Tag Name](#) [Yet Another Tag Name](#)

3.2 ★★★☆☆ (742) 6 CFU | March - May | 45 hours

Description: The course of Course Name focuses on lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim ven... [Read More](#)

Course Name Which May Be Too Long : ☰

Degree Course Name

[Tag Name](#) [Another Tag Name](#) [Yet Another Tag Name](#) [Yet Another](#) >

3.2 ★★★☆☆ (742) 6 CFU | March - May | 60 hours

Description: The course of Course Name focuses on lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim ven... [Read More](#)

[Explore all courses >](#)

Search filters

Category ^

- Architecture
- Civil and Industrial Engineering
- Economics
- Humanities
- Information Engineering, Informatics and Statistics
- Law
- Mathematics, Physics and Natural Sciences
- Medicine and Dentistry
- Medicine and Psychology
- Pharmacy and Medicine
- Political Sciences, Sociology and Communications

[Reset](#)

Tags ^

- Tag Name 01
- Tag Name 02
- Tag Name 03

[Reset](#)

CFUs ^

- 3 or less
- From 4 to 6
- From 7 to 9
- From 10 to 12
- From 13 to 15
- From 16 to 21
- 22 or more

[Reset](#)

Rating ^

- 4.5 or more
- 3.5 or more
- 2.5 or more
- 1.5 or more

[Reset](#)

Lessons Period ^

Language ^

Total Hours ^

- 30 or less
- From 31 to 60
- From 61 to 90
- From 91 to 120
- From 121 to 150
- From 151 to 200
- 201 or more

[Reset](#)

972 Results For “Terms typed in the search Bar”

Sort By: Most Relevant ▾

Course Name

Degree Course Name

[Tag Name](#) [Another Tag Name](#) [Yet Another Tag Name](#) [Tag Name](#) [Another Tag Name](#) [Yet Another Tag](#) >

3.2 ★★★☆☆ (742)

6 CFU | September - December | 60 hours

Description: The course of Course Name focuses on lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut e... [Read More](#)

Course Name

Degree Course Name

[Tag Name](#) [Another Tag Name](#) [Yet Another Tag Name](#) [Tag Name](#) [Another Tag Name](#) [Yet Another Tag](#) >

3.2 ★★★☆☆ (742)

6 CFU | September - December | 60 hours

Description: The course of Course Name focuses on lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut e... [Read More](#)

Course Name

Degree Course Name

[Tag Name](#) [Another Tag Name](#) [Yet Another Tag Name](#) [Tag Name](#) [Another Tag Name](#) [Yet Another Tag](#) >

3.2 ★★★☆☆ (742)

6 CFU | September - December | 60 hours

Description: The course of Course Name focuses on lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut e... [Read More](#)

Course Name

Degree Course Name

[Tag Name](#) [Another Tag Name](#) [Yet Another Tag Name](#) [Tag Name](#) [Another Tag Name](#) [Yet Another Tag](#) >

3.2 ★★★☆☆ (742)

6 CFU | September - December | 60 hours

Description: The course of Course Name focuses on lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut e... [Read More](#)

Course Name

Degree Course Name

[Tag Name](#) [Another Tag Name](#) [Yet Another Tag Name](#) [Tag Name](#) [Another Tag Name](#) [Yet Another Tag](#) >

3.2 ★★★☆☆ (742)

6 CFU | September - December | 60 hours

Description: The course of Course Name focuses on lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut e... [Read More](#)

Show more ▾

g - Cerca con Google

Search Google or type a URL

WEBSITE LOGO Explore > Search for a course Search >

Your Username YU

Category > Sub Category > Degree Course

Course Name

Degree Course Name

6 CFU | Language: English | Lessons Period: September - December | Total course duration: 60 hours

Reviews by other users: 3.2 ★★★☆☆ (742 reviews)

Course Status: Completed

Save for later Add to favorites

Related Degree Course Information: Third Year - First Semester
Level: Advanced

[Compare this course with another course \(add to Comparison List\) >](#)

Course Objectives:

The course of Course Name focuses on Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat.

Course description:

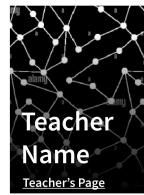
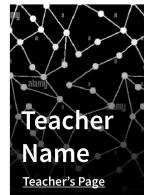
NOTE: the course description also includes (when possible) information about course material, assessments method, and other relevani information (if the course teacher specified).

The course of Course Name focuses on Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat.

Duis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan iusto odio dignissim qui blandit praesent luptatum zzril delenit augue duis dolore te feugait.

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat.

Teachers



Course Reviews

3.2 ★★★☆☆

742 total reviews

57%	5 ★★★★★
20%	4 ★★★★☆
17%	3 ★★★☆☆
7%	2 ★★☆☆☆
2%	1 ★☆☆☆☆

Sort By: Most Recent

Add your review

Reviewer Username

✓ Reviewer attended this course

★★★☆☆

Good course, but lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper uscipit lobortis nisl ut aliquip ex ea com.

Reviewer Username

✗ Reviewer did NOT attend this course

★★★★☆

Course seems excellent from the description, but lorem ipsum dolor sit amet, consectetur adipiscing euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper uscipit lobortis nisl ut aliquip ex ea com. lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi enim ad minim veniam, quis nostrud exerci tation ullamcorper uscipit lobortis nisl ut aliquip ex ea com.

Reviewer Username

✓ Reviewer attended this course

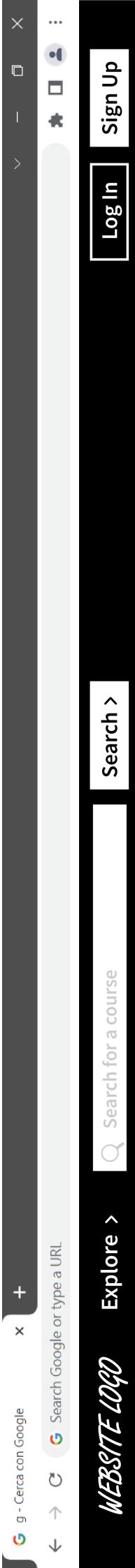
★★☆☆☆

Show more

Course Comparison (comparing 2 courses)

You can add courses to the comparison by accessing a course page and clicking on “Compare this course with another course”.

Course Name Which May Be Too... :		Course Name Which May Be Too... :	
Degree Course Name	Tag Name Another Tag Name Yet Another Tag Name Yet / >	Degree Course Name	Tag Name Another Tag Name Yet Another Tag Name Yet / >
Rating:	3.2 ★★★☆☆ (742)	Rating:	3.2 ★★★☆☆ (742)
CFUs:	6 CFU	CFUs:	6 CFU
Language:	English	Language:	English
Degree Course:	Degree Course Name	Degree Course:	Degree Course Name
Faculty:	Faculty name	Faculty:	Faculty name
Department:	Department Name	Department:	Department Name
Lesson Period:	March - May	Lesson Period:	March - May
Total Course Duration:	55 hours	Total Course Duration:	55 hours
Teachers:	Teacher Name, Other Teacher, Other Teacher	Teachers:	Teacher Name, Other Teacher, Other Teacher
Level:	Intermediate	Level:	Intermediate
Related Degree Year:	First Year	Related Degree Year:	First Year
Related Degree Lessons Period:	Second Semester	Related Degree Lessons Period:	Second Semester
Objectives: The course of Course Name aims to lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim...		Objectives: The course of Course Name aims to lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim...	
Read More		Read More	
Description: The course of Course Name focuses on lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim...		Description: The course of Course Name focuses on lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim...	
Read More		Read More	



Sign up to create your account

WEBSITE LOGO

Explore > Search for a course

Log In **Sign Up**

Username Insert your username

Email Insert your email

Password Insert your password

Confirm Password Insert your password again

Sign up

By signing up, you agree to the [Terms of Use](#) and [Privacy Policy](#).

Already have an account? [Log in](#)

WEBSITE LOGO
About us
Contact us
Help and Support

Terms
Privacy policy
Sitemap

WEBSITE LOGO

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Complete user profile

Select your favorite tags and topics
This will be used to suggest you courses you might like
or
[Skip this part and continue to the website](#)

Architecture ^
 Tag name 1
 Tag name 2
 Tag name 3
 Tag name 4

Civil and industrial engineering ^

Economics ^

Humanities ^
 Tag name 1
 Tag name 2
 Tag name 3

Information engineering, informatics and statistics ^

Law ^

Mathematics, Physics and Natural Sciences ^

Medicine and Dentistry ^

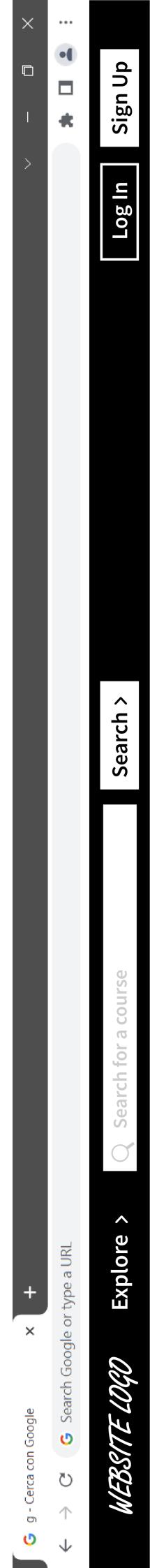
Medicine and Psychology ^

Pharmacy and Medicine ^

Political Science, Sociology and Communications ^

[Save preferences](#)

[Skip](#)



WEBSITE Logo

Search for a course

Search >

Sign Up

+

X

g - Cerca con Google

← → Search Google or type a URL

Log in to your WebsiteName account

Email

Password

[Sign in with Google](#)

[Sign in with GitHub](#)

[Login with Facebook](#)

[Forgot password?](#)

Don't have an account? [Sign up](#)

About us
Contact us
Help and Support

Terms
Privacy policy
Sitemap

WEBSITE Logo

English

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5. Expert Evaluation

In the so-called “expert-based evaluation”, either a human computer interaction expert or a designer assesses the degree to which the system is following the design and usability rules (rules used to design systems with high usability).

This kind of evaluation allows to identify the initial problems a system prototype may have so that they can be solved before proceeding with the user-based evaluation phase of the user centered design approach.

Expert evaluation techniques include the “cognitive walkthrough”, the “heuristic evaluation” and the “review-based evaluation”.

For the development of our project, we asked our professors Valeria Mirabella and Alba Bisante to perform both an “heuristic evaluation” of our system and a “cognitive walkthrough” for the “Compare Courses” task (defined in section 3.4 of this document).

5.1 Heuristic Evaluation

The “Heuristic Evaluation” is a method for identifying design problems in a user interface by analyzing its usability. Evaluators judge the design against a set of heuristics and report any violation expressing the severity of each violation.

A widely used set of heuristics is represented by Jakob Nielsen's 10 general principles for interaction design (Nielsen's Heuristics), which can be summarized as:

1. **Visibility of system status:** the design should always keep users informed about what is going on, through appropriate feedback within a reasonable amount of time;
2. **Match between system and the real world:** the design should “speak the users' language”.
Use words, phrases, and concepts familiar to the user, rather than system-oriented terms.
Follow real-world conventions, making information appear in a natural and logical order;
3. **User control and freedom:** users often perform actions by mistake.
They need a clearly marked "emergency exit" to leave the unwanted action without having to go through an extended process;
4. **Consistency and standards:** users should not have to wonder whether different words, situations, or actions mean the same thing.
Follow platform and industry conventions;
5. **Error prevention:** good error messages are important, but the best designs carefully prevent problems from occurring in the first place.
Either eliminate error-prone conditions, or check for them and present users with a confirmation option before they commit to the action;

6. **Recognition rather than recall:** minimize the user's memory load by making elements, actions, and options visible.
The user should not have to remember information from one part of the interface to another. Information required to use the design (e.g. field labels or menu items) should be visible or easily retrievable when needed;
7. **Flexibility and efficiency of use:** shortcuts, hidden from novice users, may speed up the interaction for the expert user so that the design can cater to both inexperienced and experienced users. Allow users to tailor frequent actions;
8. **Aesthetic and minimalist design:** interfaces should not contain information that is irrelevant or rarely needed. Every extra unit of information in an interface competes with the relevant units of information and diminishes their relative visibility;
9. **Help users recognize, diagnose, and recover from errors:** error messages should be expressed in plain language (no error codes), precisely indicating the problem and constructively suggesting a solution;
10. **Help and documentation:** it's best if the system doesn't need any additional explanation. However, it may be necessary to provide documentation to help users understand how to complete their tasks.

We provided our experts with the exact copy of the mockups of our first prototype, which were as interactive as possible.

They consist of a pdf containing all the website's pages (from 1 to 9) and also additional pages (from 10 to 19) containing some of the system states when comparing courses, mostly needed for the expert's cognitive walkthrough (described in section 5.2 of this document).

The PDF contains elements which, when clicked, will redirect the evaluator to the corresponding page of the mockup's PDF representing the response of the system to that specific user action.

5.1.2 Heuristic Evaluation Results

The evaluation of our first prototype was made by considering the aforementioned Nielsen's heuristics and resulted in the following report:

Frame/Page	Heuristic Violated	Severity	Description/Comment
Course information	Recognition rather than recall	2	Consider introducing the system specifying for example if the catalogue consists of online course only or if the course is for free
Course details	Match between the system and the real world	4	Add the course location when applicable
All	Aesthetic and minimalist design	2	The site is very rich. Consider the opportunity to simplify the visualization
All	Help and documentation	3	Consider adding help and documentation
Search filters	Flexibility and efficiency of use	3	User could be interested in filtering by course in presence vs course online (or remotely accessible)

The severity of the violated heuristic is represented by a number, ranging from 0 to 4, in accordance with the following scale:

- 0: I don't agree that this is a usability problem at all;
- 1: Cosmetic problem only;
- 2: Minor usability problem;
- 3: Major usability problem;
- 4: Usability catastrophe.

As also noted in both the experts' report, we designed the system's user interface to be as "standard" as possible: this allowed us to minimize the number of possible usability heuristic's violations.

Despite this user interface standardization, we still introduced some minor design and usability flaws, which were identified by the experts. We tried to analyze and address all of the violated heuristics in our second version of the prototype, and presented the introduced fixes and design changes later in this document.

5.2 Cognitive Walkthrough

The “cognitive walkthrough” is a technique used to evaluate the learnability of a system from the perspective of a new user. Unlike user testing, it does not involve users but it relies on the evaluation of a set of experts who execute (“walk through”) each step of a certain task and assess the interface’s effectiveness from a novice user’s point of view. It evaluates the impact that the interaction has on the user, the cognitive processes that are required to execute the task, and identifies potential learning problems for the user.

During the evaluation of a given task, the expert has to answer the following questions at each step of the interaction:

1. **Is the effect of the action the same as the user's goal at that point?**
In other words, do users understand that the action (step) is needed to reach their final goal?
2. **Will users see that the action is available?** In other words, is the interactive element that achieves the step visible or easily findable?
3. **Once users have found the correct action, will they know it is the one they need?** Hence will users understand the specific element’s or button’s label/symbol and will they be able to interact with it?
4. **After the action is taken, will users understand the feedback they get?**
Based on what occurs after the action is taken, will users know that this action was correct and helped them make progress toward their final goal?

The requested task for the experts’ cognitive walkthrough was the previously described “Compare Courses” task, consisting of comparing up to three courses which can be searched and found on the website.

The following (which was sent to the experts) is the complete list of the user actions and system responses when executing the task:

- Act. 1: insert search terms in the search bar
- Resp. 1: display shows the inserted data
- Act. 2: press the “Search” button near the search bar
- Resp. 2: display moves to “Search Page”
- Act. 3: click on any Course Card
- Resp. 3: display moves to “Course’s Information Page”
- Act. 4: click on “Compare this course with another course (add to Comparison List)” link
- Resp. 4: display moves to the previous page (“Search Page” in this case, where the user can interact with filters and execute a new search if needed) and the “Comparison list” showing the selected course to be compared is showed

- Act. 5: click on any Course Card
- Resp. 5: display moves to “Course’s Information Page” (the “Comparison list” carries between pages)
- Act. 6: click on “Compare this course with another course (add to Comparison List)” link
- Resp. 6: display moves to the previous page (“Search Page”, again, in this case) and the “Comparison list” shows the additional course to be compared
- Act. 7: click on “View Comparison” button
- Resp. 7: display moves to “Course Comparison Page” (the two selected courses are showed)
- Act. 8: click on the “+” button (or, before it, click on the horizontal scroll bar)
- Resp. 8: display moves to “Search Page” (user can execute a new search for a course if needed)
- Act. 9: click on any Course Card
- Resp. 9: display moves to “Course’s Information Page” (the “Comparison list” carries between pages)
- Act. 10: click on “Remove from list” link near any course name in the “Comparison list”
- Resp. 10: display remains at the current page (“Course’s Information Page” in this case) and the “Comparison list” is updated with the removal of the selected course
- Act. 11: click on “Compare this course with another course (add to Comparison List)” link
- Resp. 11: display moves to the previous page (“Search Page” in this case) and the “Comparison list” shows the additional course to be compared
- Act. 12: click on “View Comparison” button
- Resp. 12: display moves to “Course Comparison Page” (the two selected courses are showed)
- Act. 13: click on the scroll bar, under the courses showed
- Resp. 13: display shows the other portion of the “Course Comparison Page”

5.2.1. Cognitive Walkthrough Results

The feedback received by the evaluators is summarized in the following section, in which we only included the action/response pairs that received at least a negative answer to the previously mentioned four questions (section 5.2):

Act. 1: insert search terms in the search bar

Resp. 1: display shows the inserted data

► Expert comment: **This is not the system response in the prototype**

Act. 4: click on “Compare this course with another course (add to Comparison List)” link

Resp. 4: display moves to the previous page (“Search Page” in this case, where user can interact with filters and execute a new search if needed) and the “Comparison list” showing the selected course to be compared is showed

► Expert’s evaluation (answers to the aforementioned questions):

- Q1: Yes
- Q2: As the page contains a lot of text, the user may not notice the text link “Compare this course with another course (add to comparison list)>...”). However, the title is quite explicative, so once it is noticed it is reasonable to assume that the user will choose it
- Q3: Yes
- Q4: Yes

The evaluation resulted in a positive outcome for the majority of actions and responses. The only action-response pairs containing a violation or an incorrect behavior are actions number 1 and 4.

Action number 4 (click on the link to add the selected course to the comparison list) was identified by the expert as violating one of the usability heuristic: the user may not directly locate the link due to the overwhelming amount of information present in the page (even though once the user successfully notices the link, he should be able to easily remember it and find it in a later use case).

We therefore tried to make this option more noticeable at first glance in our second prototype.

For action number 1, instead, the expert noted not a heuristic violation but instead an oversight from our part in designing the mockups of the system: the search terms typed in the search bar were not correctly displayed in the mockups despite the response for the action indicating so. We should have therefore created an additional page or section of the mockups showing the actual system response (typed search terms correctly displayed in the search bar).

6. Prototype 2

The second prototype of our system was developed as a “working demo” of the system itself, including features and corrections suggested by the experts in the cognitive walkthrough and in the heuristic evaluation.

At the end of this section we provide images representing the main system’s website implementation: we highlighted the changes made for the actual system implementation with respect to the mockups of our first prototype.

Changes made in response to the experts suggestions were highlighted in red in the provided images, while other changes were highlighted in green.

6.1 Experts Suggestions

The experts’ report for the heuristic evaluation led us to decide to simplify some of the sections and pages of the system’s website while still providing advanced functionalities for the expert user and comprehensive information for the various courses: we added an option to switch between a “compact” and “detailed” visualization for search results in the search page (to reduce information overload) and rearranged elements and their visualization in various pages into better layouts to make their content or function more clear (we show search filters as collapsed by default in the search page, we changed the “Explore” text in the menu bar on top of each page with a more understandable “Explore categories” text, ecc...), especially in each course’s detailed information page (we simplified and rearranged both the main and secondary information sections in each course’s page, we made the “description” and “objectives” section in each course’s page collapsible, ecc...).

We also added a “system introduction” section on top of the home page of the website (as suggested by the experts in the heuristic evaluation). This allows users who land on the website for the first time to be immediately familiar with the aim and goals of the system and its available features.

Finally, following the experts’ suggestions proposed in the cognitive walkthrough, the link to add a course to the comparison list was replaced by a button, in order to make it more easily identifiable by users.

6.2 Other Changes

During the development of the first interactive and usable version of the system, intended for the user testing phase, we also introduced additional changes and fixes to improve the overall design and usability of the system:

- In the “Home page”, we added a button to refresh the suggested courses for authenticated users in the corresponding section of the page;
- In the “Login” and “Signup” pages, we added the possibility to show the inserted password(s) while typing as well as alerts and additional pop-ups for possible errors or required characteristics of the various input fields (e.g. alert for wrong password, information on the required password format for registration, ecc...);
- In the “Login” page, we added an option to sign up using both email and password as well as username and password;
- In the “Advanced Search” page, we added a search bar inside the collapsible section for the “Tags” filter (to allow users to easily search for tags they want to filter their search results for), as well as visual cues indicating that certain filters are active next to each of the filters’ section title (to make users aware of the fact that some options may be selected for a certain filter even when the corresponding options’ section is collapsed);
- In each course’s page, we added a button to let users visit the official course page in its related university’s website and we also included a secondary information section for showing additional details (e.g. course’s curriculum, course’s SSD, course code, ecc...);
- In the section containing reviews for a specific course in its relative page, we improved the layout of the reviews breakdown (in the top right corner of the section) and added the date in which reviews were submitted in their relative displayed containers;
- We added the possibility to collapse and expand the “comparison list” menu (which is shown on top of each visited page when the user intends to compare 2 or more courses);
- In the “course comparison” page, we simplified the information shown for each of the compared courses and added more instructions to help with the management of said courses.

The following images represent the pages that were modified as described above.

Welcome to Course4U

Your personal **course discovery hub**.



What can you do here?

- ⌚ Access **detailed information for over 50.000 university courses** from various **degrees and categories**
- ⌚ **Search for courses using detailed search filters** with our **Advanced Search**
- ⌚ **Login to your account** to **get suggestions about courses you may like** and write your own reviews
- ⌚ Easily **compare courses' information** using our **course comparison tool**

Your Suggested Courses

 Refresh suggested courses

Fundamentals of Automatics

Bachelor: Electronics Engineering (2021/2022)

Ingegneria Dell'Informazione, Informatica e Statistica Ingegneria Dell'Informazio 

3.8 ★★★★★ (52) 9 CFU • First semester • 90 hours • Italian

Description: Programme A brief history of automatic control and examples of application. 1. Analysis of linear and stationary dynamical systems Time invariant linear dynamic systems. Process modeling. References: Chapter 1 of [1]. Representations in the time domain....

Earth Observation

Master: Electronics Engineering (2020/2021)

Ingegneria Dell'Informazione, Informatica e Statistica Ingegneria Dell'Informazio 

3.9 ★★★★★ (77) 6 CFU • Second semester • 60 hours • English

Description: Programme Definition of remote sensing. The electromagnetic spectrum and its use for remotely sensing the Earth; visible, infrared and microwave bands. Physical bases of remote sensing. Radiative quantities (power density, radiance, emissivity); thermal...

Vision and Perception

Master: Engineering In Computer Science (2022/2023)

Ingegneria Dell'Informazione, Informatica e Statistica Ingegneria Informatica, Au 

3.7 ★★★★★ (15) 6 CFU • Second semester • 60 hours • Italian

Description: Programme 1. Image Processing Image Formation and Filtering Feature Detection and Matching Frequency analysis Optical flow and video recognition 2. Multiview Geometry Cameras, Multiple Views Projective geometry and camera geometry 3. Deep Learning for Comput...

Business Management

Bachelor: Management Engineering (2021/2022)

Ingegneria Dell'Informazione, Informatica e Statistica Ingegneria Informatica, Au 

3.9 ★★★★★ (28) 12 CFU • Second semester • 120 hours • Italian

Description: Programme Section 1 - Strategic analysis and its implications on processes and planning systems - The concept of strategy, the analysis of the sector and the analysis of resources and skills - Basic competitive strategies and analysis of competitive advantage - Strategy and value...

Course Categories



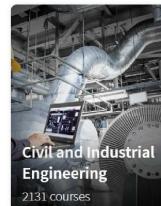
Architecture

724 courses



Arts and Humanities

6321 courses



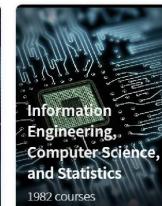
Civil and Industrial Engineering

2131 courses



Economics

921 courses



Information Engineering, Computer Science, and Statistics

1982 courses



Law

516 courses

Popular Courses

Life Science and Information | Histology

Master: Scientific Biomedical Communication (2020/2021)

Pharmacia e Medicina, Scienze Politiche, Sociologia, Comunicazione Scienze Anat 

4.2 ★★★★★ (32) 6 CFU • Second semester • 48 hours • Italian

Description: Programme The Course will address the following topics: 1) the brain bases of higher functions (attention, perception, emotion, learning, memory, decision-making processes associated with risks and benefits); 2) brain imaging in Man; 3) use of game theory to investigate...

European Union Law

Master: European Studies (2021/2022)

Giurisprudenza Studi Giuridici ed Economici European Studies Europe 

4 ★★★★★ (50) 9 CFU • Second semester • 72 hours • Italian

Description: Programme The Course is divided in two Parts. First Part: (a) process of European integration; (b) institutional system; (c) system of competences; (d) legal sources, hierarchy, decision-making and the effect of EU Law (Treaties, general principles, acts of the institutions,...

Assistance to the Birth | Assistance to th...

Bachelor: Midwifery (2021/2022)

Medicina e Odontoiatria, Farmacia e Medicina Materno Infantile e Scienze Urolog 

3.9 ★★★★★ (28) 4 CFU • Second semester • 48 hours • Italian

Description: Programme MODULE: ASSISTANCE TO THE BIRTH TEACHING: ASSISTANCE TO THE MANAGER IN BIRTH LABOR II YEAR II SEMESTER Professor: Dr. Gentile Gabriella The birth path is active in the ASL of Viterbo. Physiological birth: times, phenomena, assistance. Labor. First...

Health Law Deontology and Bioethics H...

Bachelor: Nursing (2021/2022)

Pharmacia e Medicina, Medicina e Odontoiatria Sanità Pubblica e Malattie Infettive 

4.1 ★★★★★ (56) 1 CFU • Second semester • 12 hours • Italian

Description: Programme Il diritto pubblico e il diritto privato Le fonti del diritto Il diritto costituzionale Diritti e doveri del cittadino L'ordinamento della Repubblica Italiana Gli organi costituzionali Il diritto amministrativo La pubblica amministrazione: attività e atti Il procedimento...

[Explore all courses >](#)

Search filters

Categories

- Architecture
- Arts and Humanities
- Civil and Industrial Engineering
- Economics
- Information Engineering, Computer Science, and Statistics
- Law
- Mathematics, Physics, and Natural Sciences
- Medicine and Dentistry
- Medicine and Psychology
- Pharmacy and Medicine
- Political Science, Sociology, and Communication Science

[Reset Categories](#)

Tags

 Filter tags in the list[Clear](#)

- Accadic Language
- Accelerator Physics and Relativistic Electrodynamics
- Accounting
- Actor's Work
- Adavanced Laboratory of Computing
- Administration Science
- Administrative Justice
- Administrative Law
- Administrative Law European
- Administrative Law of the Economy
- Advanced AC Drives and Project
- Advanced African Archaeology

[Reset Tags](#)

CFUs

Rating

Lessons Period

Language

Total hours

Search results for "human computer interaction"

Sort by: Relevance ▾

View: Detailed ▾

Human Computer Interaction

Master: Engineering In Computer Science (2022/2023)

Ingegneria Dell'Informazione, Informatica e Statistica

Ingegneria Informatica, Automatica e Gestionale 'Antonio Ruberti'

Engin ➔

4.9 ★★★★★ (29)

6 CFU • Second semester • 60 hours • English

Description: Programme Preliminaries on Human-computer Interaction Usability Principles Introduction to User-Centered Design Cognitive Models Task Models Dialogue Design System Models Evaluation Techniques Interaction Design Basis Interaction Technologies Adopted texts A. Dix. et al. Human-Computer Interaction. Pearson/Prentice Hall, 2003 Lesson slides

Human-Computer Interaction

Bachelor: Informatics (2022/2023)

Ingegneria Dell'Informazione, Informatica e Statistica

Informatica

Informatics

Human-Computer Interaction

3.9 ★★★★★ (73)

6 CFU • First semester • 36 hours • Italian

Description: Programme Topics of this course: HCI topics: - need finding, - storyboarding, - prototyping, - interface evaluation - design and development of interactive systems methodologies - Interaction on mobile devices - use context - device capabilities - main mobile interaction principles - design criteria on Android - design criteria on iOS Adopted texts Course textbook: - Kurniawan, S. (2004). Interaction design: Beyond human-computer interaction by Preece, Sharp and Rogers (2001), ISBN 0471492787 <http://www.id-book.com> Another suggested textbook: - Alan Dix, Janet Finlay, Gregory Abowd, Russell Beale "HUMAN-COMPUTER INTERACTION",...

Human Computer Interaction on the Web

Master: Computer Science (2021/2022)

Ingegneria Dell'Informazione, Informatica e Statistica

Informatica

Computer Science

Human Computer Interaction on the ➔

3.9 ★★★★★ (60)

6 CFU • Second semester • 60 hours • English

Description: Programme This course is about principles of different interactive technologies, involving communication over the web. Thus, after a recap of basic HCI topics, we will analyze interaction in several different contexts: mobile, wearable, IoT, chatbots and messaging, car, etc. Topics of this course: Post-WIMP user interfaces and interaction: • wearable UI • UX for IoT • conversational interfaces: chatbots, voice UI • tangible interaction • tactile/haptic UI • gestural and whole body UI • virtual and augmented reality, 3D UI • zooming UI, 10 ft UI, bifocal displaysWearable devices HCI methodologies and tools: • context-aware implicit interaction • activi...

Human-Computer Interaction

Bachelor: Informatics (2021/2022)

Ingegneria Dell'Informazione, Informatica e Statistica

Informatica

Informatics

Human-Computer Interaction

3.9 ★★★★★ (69)

6 CFU • First semester • 36 hours • Italian

Description: Programme The course deals with: - the models and theories underlying human-computer interaction, and in particular cognitive models, communication and collaboration models, task analysis, notation and dialogue design, system modeling, models for advanced interaction, social and collaborative aspects; - the integration of HCI in the software development cycle, and in particular the user centered design, the iterative development process, the scenarios, the evaluation techniques, the integration with agile programming. List of topics: need finding interviews and questionnaires storyboard expert-based interface evaluation techniques us...

Human Computer Interaction on the Web

Master: Computer Science (2020/2021)

Ingegneria Dell'Informazione, Informatica e Statistica

Informatica

Computer Science

Human Computer Interaction on the ➔

4 ★★★★★ (66)

6 CFU • Second semester • 60 hours • English

Description: Programme This course is about principles of different interactive technologies, involving communication over the web. Thus, after a recap of basic HCI topics, we will analyze interaction in several different contexts: mobile, wearable, IoT, chatbots and messaging, car, etc. Topics of this course: Post-WIMP user interfaces and interaction: • wearable UI • UX for IoT • conversational interfaces: chatbots, voice UI • tangible interaction • tactile/haptic UI • gestural and whole body UI • virtual and augmented reality, 3D UI • zooming UI, 10 ft UI, bifocal displaysWearable devices HCI methodologies and tools: • context-aware implicit interaction • activi...

[Show more results](#)

Human Computer Interaction

Master: Engineering In Computer Science (2022/2023) • First year • Second semester

Course status: **Undefined**

ADVANCED COURSE Ingegneria dell'informazione, informatica e statistica Ingegneria informatica, automatica e gestionale "antonio ruberti"

Engineering in computer science Human computer interaction

6 CFU (60 hours) • Lessons period: September - December

4.9 ★★★★☆ (31 reviews)

[Compare this course with another course >](#)

[Visit course's official page ↗](#)

Course Description

[Hide description](#)

Programme

Preliminaries on Human-computer Interaction Usability Principles Introduction to User-Centered Design Cognitive Models Task Models Dialogue Design System Models Evaluation Techniques Interaction Design Basis Interaction Technologies

Adopted texts

A. Dix, et al. Human-Computer Interaction. Pearson/Prentice Hall, 2003
Lesson slides

Exam reservation date start	Exam reservation date end	Exam date
16/01/2023	28/01/2023	30/01/2023
07/02/2023	15/02/2023	16/02/2023
27/04/2023	20/06/2023	26/06/2023
27/04/2023	04/07/2023	13/07/2023
27/04/2023	06/09/2023	13/09/2023

Course Objectives

[Hide objectives](#)

General Objectives:

The main goal of this course is to introduce the fundamentals of human-computer interaction and to discuss in detail the concept of usability for interactive systems as well as the user-centered design (UCD). The various topics will be examined under different perspectives, dealing with theoretical, methodological, technological and application-oriented aspects, looking at them both in the current scenario and in view of future developments. Along the course, the student should acquire theoretical skills, methodologies, and techniques to be applied in a concrete project to be developed following the user-centered design.

Specific objectives:

Knowledge and understanding:
User-centered design. Techniques for requirement collection and analysis, goal and task models, interaction and system models, methods for usability evaluation. Some advanced issues in human-computer interaction, such as cooperative systems, immersive and ubiquitous environments, intelligent interfaces, etc.

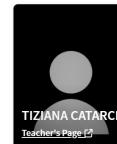
Apply knowledge and understanding:
Understanding the concepts of human-computer interaction (or human-system interaction) and usability. Be able to conduct a complete project of an interactive interactive system following the UCD methodology.

Critical and judgment skills:
Being able to evaluate the usability of an interactive system and its adequacy with respect to the goals and tasks of end users and stakeholders.

Communication skills:
The project activities and the course exercises allow the student to be able to communicate / share the requirements of an interactive system, as well as the design choices and the development methods.

Learning ability:
In addition to the classic learning skills provided by the theoretical study of the recommended material, the course structure, in particular the project activities, stimulates the students to deepen their knowledge of the topics, working in team, and to practically apply the concepts and techniques learned during the course.

Teachers



TIZIANA CATARCI

Other Infos

SSD

ING-INF/05

Code

1038134

Faculty

Ingegneria
dell'informazione,
informatica e statistica

Department

INGEGNERIA
INFORMATICA,
AUTOMATICA E
GESTIONALE "ANTONIO
RUBERTI"

Degree Course

Engineering in Computer
Science

Degree Type

Masters

Curriculum

Ingegneria Informatica
(percorso valido anche ai
fini del conseguimento
del doppio titolo italo-
venezuelano o italo-
russo)

Miscellaneous

Attività formative
caratterizzanti

Ambito disciplinare:
Ingegneria informatica

Exercise (Hours): 24

Lecture (Hours): 36

Course Reviews

4.9 ★★★★☆

31 total reviews

Sort reviews by: Date (descending) ▾



Add your review

Chloe Turner

★★★★★ 5/5

Reviewer attended this course

July 09, 2022

This course was truly outstanding. The professor's teaching style was exceptional, and the course content was highly informative. The practical exercises were enlightening. I can't recommend this course enough.

John Doe

★★★★★ 5/5

Reviewer attended this course

May 15, 2022

Great course! Learned a lot.

Dwayne Johnson

★★★★★ 5/5

Reviewer did NOT attend this course

April 14, 2022

Didn't attend, so can't comment, but course programme is very interesting and well-structured.

William Reed

★★★★★ 5/5

Reviewer attended this course

March 22, 2022

This course was a game-changer for my career. The material was relevant, and the professor's guidance was exceptional. I would highly recommend this to anyone seeking a comprehensive understanding of the subject. It's worth every penny.

Will Smith

★★★★★ 5/5

Reviewer did NOT attend this course

January 27, 2021

Didn't attend but the course seem very good.

Course comparison (comparing 2 courses)

You can add more courses to the comparison by accessing a course's page and clicking on the "Add course to comparison list" button.

Remove course from comparison	Remove course from comparison	Add course
Human Computer Interaction CFU: 6 First Year - Second semester Language: English Degree Course (Master): Engineering In Computer Science (2022/2023) Faculty: Ingegneria dell'informazione, informatica e statistica Department: INGEGNERIA INFORMATICA, AUTOMATICA E GESTIONALE "ANTONIO RUBERTI" Teachers: TIZIANA CATARCI Level: Advanced Lessons Period: February - May Course Code: 1038134 SSD: ING-INF/05 Hours: 60 hours Curriculum: Ingegneria Informatica (percorso valido anche ai fini del conseguimento del doppio titolo italo-venezuelano o italo-russo) Other Infos: Attività formative caratterizzanti Ambito disciplinare: Ingegneria informatica Exercise (Hours): 24 Lecture (Hours): 36	Human Computer Interaction on the Web CFU: 6 First Year - Second semester Language: English Degree Course (Master): Computer Science (2021/2022) Faculty: Ingegneria dell'informazione, informatica e statistica Department: INFORMATICA Teachers: EMANUELE PANIZZI Level: Advanced Lessons Period: February - May Course Code: 1047630 SSD: INF/01 Hours: 60 hours Curriculum: Multimedia Computing and Interaction Other Infos: Attività formative caratterizzanti Ambito disciplinare: Discipline Informatiche Exercise (Hours): 24 Lecture (Hours): 36	

Sign up for a new Course4U account

Username NOTE: Your username will be visible to other users

Email Insert your email Please insert a valid email

Password Eye icon

Confirm Password Eye icon Password does not match

Sign Up

By signing up you agree to our [Terms of Use](#) and [Privacy Policy](#).

Already have an account? [Login](#)

Complete your profile

Select your favorite tags and topics

This will be used to suggest courses you may like

OR

[Skip this phase and continue](#)

Architecture ▾

Arts and Humanities ▾

Civil and Industrial Engineering ▾

Economics ▾

Information Engineering, Computer Science, and Statistics ▾

- INFORMATICA
- Applied Computer Science and Artificial Intelligence
- Computer Science
- Cybersecurity
- Informatics
- INGEGNERIA INFORMATICA, AUTOMATICA E GESTIONALE "ANTONIO RUBERTI"
- Artificial Intelligence and Robotics
- Computer and System Engineering
- Control Engineering
- Data Science
- Engineering in Computer Science
- Information Engineering
- Management Engineering
- INGEGNERIA DELL'INFORMAZIONE, ELETTRONICA E TELECOMUNICAZIONI
- Communication Engineering
- Electronics Engineering
- SCIENZE STATISTICHE
- Actuarial and Financial Sciences
- Statistical Methods and Applications
- Statistical Sciences
- Statistics for management
- Statistics, Economics and Society
- Statistics, Economics, Finance and Insurance

Law ▾

Mathematics, Physics, and Natural Sciences ▾

Medicine and Dentistry ▾

Medicine and Psychology ▾

Pharmacy and Medicine ▾

Political Science, Sociology, and Communication Science ▾

[Save your preferences](#)

[Skip this step](#)

Login to your Course4U account

Username / Email

Password Insert your password
Please insert your password

Login

or

 **Login with Google**

 **Login with GitHub**

 **Login with Facebook**

[Forgot your password?](#)

Don't have an account? [Register](#)

7. User Evaluation

User evaluation consists of involving potential users of the system to discover additional interface problems, missing features and possible fixes.

Users are asked to interact with the designed system to evaluate its usability.

Several techniques for user evaluation exist: we decided to employ the “think aloud”, “cooperative evaluation”, “post-task walkthrough”, “interviews” and “controlled experiments” techniques.

7.1 Think Aloud

The “think aloud” is a user evaluation technique which consists of the user performing some tasks defined for the system while actively describing all the steps he is performing, why he is performing them and what he thinks is happening.

Users therefore verbalize their thoughts as they navigate through the user interface.

To perform the think aloud study we need to gather representative users for the system, make them perform the major tasks and avoid providing any verbal clarification to users questions and doubts, while also reminding the user to keep talking during the evaluation.

This method has a handful of benefits. Most importantly, it leads to the discovery of what users really think about the design. Moreover, it is cheap to perform (no special equipment is needed), it is flexible (since it can be employed during many phases of the system development), and it is also simple to learn.

On the other hand, it is too reliant on the specific group of users chosen for the evaluation, and the act of speaking out loud may alter the performance of the user’s task execution.

For the evaluation, we chose a group of 10 people belonging to both students and workers, with different ages and different levels of pc familiarity.

Our test users were asked to perform the following tasks (using the second version of our prototype):

1. “Authenticate User” task: authenticate in the website and select up to five preferred tags for your profile
 2. “Compare Courses” task: compare two different courses, having different categories, tags and CFUs
-

To perform the think aloud session, we took note of user difficulties and frustrations during their first interaction with the system. Moreover, some users gave us permission to collect a recording of their audio during the various sessions, which we used to simplify our note taking activity during the testing phase and therefore focus on the user's interaction and thinking process.

The main takeaways from our think aloud sessions are the following:

- for the “Authenticate User” task (1), when requested to select the tags to customize their profile (in the “complete profile” page of the website), users took some time to understand what that particular page was aimed for and how they could complete their profile: some of them were confused by the fact that, in order to select tags to customize their course’s suggestions, they first had to expand the “collapsible” areas containing the various tags to select (collapsible sections were collapsed by default), while other test users initially started selecting tags but later used the “skip” button to skip this phase entirely (these test users later told us that they found there were too many tags to choose from, and decided to abandon this activity);
- for the “Compare Courses” task (2), two of the testers were not sure how to get to the advanced search page starting from the website’s home page, and were dubious about whether the “Search” button in the menu bar on top of the page would actually lead them to the “Advanced Search” page even if no search terms were provided. One of them later clicked the search button anyways and managed to complete the task, while the other user opted to click on the “Explore categories” button in the menu bar instead.

All the users were able to successfully perform the two tasks, with some of them appreciating the direct presence of the “Comparison List” section at the top of the page when choosing the courses to compare as well as the detailed search filters for the advanced search function.

Moreover it was immediate for them to perform the authentication task and choose the tags they were interested in, and some of them also found the addition of the “Suggested courses” section in the home page (to which users were redirected after registering and logging in to their account) very useful.

7.2 Cooperative Evaluation

Since the results of the “think aloud” technique, discussed above, highly depend on who is selected as a test user, we decided to also conduct a “cooperative evaluation” session with a different group of people.

Differently from the “think aloud” technique, in the “cooperative evaluation” the user is considered a collaborator rather than simply a tester.

Both the evaluator and the user can ask each other questions throughout the evaluation, and the user itself is encouraged to criticize the system and ask for additional clarifications.

We decided to ask the users to perform a different task with respect to the “think aloud” session, since we also wanted to test one of the remaining main features of the website.

We asked 6 of our testers to perform the following task:

1. Write a review for a course of your choice.

The cooperative evaluation led to the following results:

- One of our testers found it difficult to notice whether a certain reviewer left a review for a course after following the course or not, because of the “Reviewer attended this course” and “Reviewer did not attend this course” text being too hard to notice;
- Two of our other testers found it not immediate to locate the “Add your review” button in the reviews section.

7.3 Post-Task Walkthrough

Additionally, we also wanted to perform a “post-task walkthrough” with Alberto, one of the test users of the system, to verify the usability and the effectiveness of the “complete profile” section of the user registration for the “Authenticate User” task.

For the “post-task walkthrough” technique, the user’s interaction with the system is recorded while he is performing a task. After he is finished, the user and the designers watch and/or listen to the recording to identify the reasons behind the actions and the choices of the user.

We chose to evaluate the “complete profile” phase again (after testing it in the dedicated “think aloud” sessions) since it was the one with the majority of anomalies in user’s behavior to us, as discussed above.

For our evaluation, we recorded Alberto’s interaction with the system using the “OBS” software, including the captured video of the screen and the recording of the audio of the interaction.

We played back to Alberto the part of the recording in which, after selecting various tags, he went back and deselected one of them, and we asked him why he chose to do so.

He responded by saying that he went back to revise the tags he had selected and didn't really care about the tag he ended up deselecting.

We then asked Alberto if he encountered problems or flaws while executing the task, but he told us that everything went alright for him.

Despite the fact that he didn't find the task execution particularly confusing or difficult, Alberto was still willing to help by providing some additional feedback, and suggested us to replace the "Skip this phase" link on top of the "complete profile" page with a "Skip" button similar to the one found at the bottom of the page.

7.4 Interviews

We decided to conduct an interview with Marco and Arianna, two of our testers, to better understand if our second prototype still suffered general interface problems or not.

The users were asked to perform the major tasks of the system before answering our questions, and were encouraged to explore the website and try to interact with it as much as possible.

We then asked Marco and Arianna the following questions:

1. Did you feel comfortable during the testing of our system?
2. For each one of the executed tasks, did you find any particular pain point?
3. Can you rate how easy it was for you to execute each task on a scale from 1 to 5?
4. What do you think about the general design of the current version of the system?
Do you have any suggestions?

While all 4 questions generally received a positive answer from both our respondents, Marco found it a little bit more difficult to perform the "Write Review" task of the system, and pointed to the fact that it was not immediate for him to find out how to actually insert a review for a course, as it took a little bit extra time to locate the button to do so.

He suggested making the form to insert a review already visible by default on top of the reviews section, with any user immediately being able to start writing his review and/or give the course a rating. He also suggested adding a "Degree course type" filter in the Advanced Search page and to change the order of the provided filters to reflect their importance in his opinion. The rest of the tasks were easy to perform for him, and he had no complaints about the design of the system as a whole.

Arianna, on the other hand, found the system to be very easy to use, encountered no difficulty in executing the tasks. When asked if she could give us some suggestions about the website, Arianna told us that the only suggestion she could think of was a "Back to top" button in each of the website's pages, to allow users to easily scroll back to the start of the page.

8. Controlled Experiment

A controlled experiment is performed with a representative group of people which depicts the real users. In this experiment, the evaluator chooses an hypothesis to be tested, that is a prediction of a certain outcome of the test, and measures some of the targeted aspects of the user behavior, namely the dependent variables. These measurements are performed by changing a set of experimental conditions, known as “independent variables”, which produces different versions of the system to be tested. The goal of the experiment is to disprove the so-called “null hypothesis”, that is the hypothesis for which we assume to see no changes in the dependent variables caused by changes of the independent variables.

There exist two experimental methods that can be employed: “between groups”, in which each participant performs only under one condition, and “within groups”, in which all participants perform the experiment under every condition.

8.1 Problem analyzed

We decided to perform a controlled experiment to help us choose between two alternatives for the user interface of one of our system’s core functionalities: the “add user review” feature, available in each course details’ page.

The first version of the interface, to which we refer to as “version A”, contains an “Add your review” button with an icon and text, which, on click, expands either a form to fill to submit the user rating and review, or an alert for when the user is not logged in, and therefore needs to login first (both the form and the alert are located immediately after the button and immediately before the list of already existing reviews for the corresponding course).

The second version of the system, “version B”, instead, has no button, but instead shows the aforementioned form (to insert the user rating and review) in its entirety, by default, along with the same alert mentioned for “version A” on top of it when the user is not logged in (in the latter case, the form’s fields won’t be active and the user won’t be able to fill them or click on any of them).

We decided to perform an experiment on these two versions of the website since the original version of user interface for the “add review” functionality (version A), which was tested by our users during the various user based evaluation sessions, was sometimes deemed to be not immediately clear.

One of our interviewed testers suggested introducing some changes to make the user interface somewhat similar to what we implemented for version B (as described in section 7.4 of this document).

Version A

Course Reviews

3.8 ★★★★☆
45 total reviews

Sort reviews by: Date (descending) ▾

Noah Adams
★★★★★ 4/5

Liam Wilson
★★★★ 4/5

Add your review button on the right, form to insert review not expanded

Version B

Course Reviews

3.8 ★★★★☆
46 total reviews

Sort reviews by: Date (descending) ▾

⚠ You must be logged in to add a review

Add your review

Did you attend any lesson of this course?

Review's rating: - NOT SELECTED - ▾

Text of your review (optional):
Write the text of your review here...

Submit your review

valerio
★★★★★ 5/5
Good course

✗ Reviewer did NOT attend this course September 05, 2023

No button, form always expanded by default, user NOT logged in and inactive fields and buttons

Course Reviews

3.8 ★★★★☆
45 total reviews

Sort reviews by: Date (descending) ▾

⚠ You must be logged in to add a review

Noah Adams
★★★★★ 4/5

Liam Wilson
✗ Reviewer did NOT attend this course

Add your review button on the right, user NOT logged in, showing "login" alert

Course Reviews

3.8 ★★★★☆
45 total reviews

Sort reviews by: Date (descending) ▾

Add your review

Add a review that will be visible to other students

Review's rating: - NOT SELECTED - ▾

Did you attend any lesson of this course?

Yes, I attended lessons of this course
No, I did NOT attend any lesson of this course

Text of your review (optional):
Write the text of your review here...

Cancel and close

Submit your review

Noah Adams
★★★★★ 4/5

Liam Wilson
✗ Reviewer did NOT attend this course

"Add your review" button on the right, expanded form, user logged in, showing form to add user review

Course Reviews

3.8 ★★★★☆
46 total reviews

Sort reviews by: Date (descending) ▾

Add your review

Did you attend any lesson of this course?

Review's rating: - NOT SELECTED - ▾

Text of your review (optional):
Write the text of your review here...

Submit your review

valerio
★★★★★ 5/5
Good course

✗ Reviewer did NOT attend this course September 05, 2023

Noah Adams
★★★★★ 4/5

✓ Reviewer attended this course June 27, 2022

No button, form always expanded by default, user logged in, active fields and buttons

8.2 Participants

To select a group for our experiment we chose participants who were coherent with our ideal user of the website: we primarily involved university students, but also included a smaller sample size of middle-aged testers with an interest in university courses' discovery.

We managed to gather a group of 14 people, each of them being completely new to our system.

8.3 Independent Variables

The independent variables of our experiment are the two different versions for the interface to add a user review in the course's information page: the first version of the interface, version A, contains a button which expands the form to fill to submit the review, while version B of the interface replaces the button completely and directly shows the form to allow the user to immediately insert information about his review without any in-between steps, except for the authentication step, always required to submit a review.

8.4 Dependent Variables

We decided to choose, as the only dependent variable of our experiment, the time employed by the user to write the review starting from the home page, as to also get a measurement of how easy and effective it is for users to find out how to insert a review for a specific course using our system and therefore submitting it.

8.5 Hypothesis

For the experiment, our hypothesis was that version A (which uses the button) would be more intuitive for the user than version B (which uses the form instead), and therefore allow users to figure out how to insert a review in a shorter time.

The null hypothesis for our experiment is therefore defined as follows:

- The average time in performing the task of writing a review for a course will not be significantly different when using version A rather than version B.

8.6 Experimental Method

We decided to employ the “within groups” method, since we had a restricted number of people to test our prototype.

In doing so, the “transfer of learning” problem could alter the results of our experiment in the case of one of the two versions’ interfaces being tested before the other.

To mitigate this problem, we divided our sample group in two subgroups of 7 people each: the first one completed the tasks first on the version A of the prototype and later moved onto version B, while the other subgroup performed the same tasks in the reverse order.

With this approach, we could collect more balanced and less biased measures to analyze for our experiment.

8.7 Experiment Details

The experiment ran with every participant testing one interface at a time, as defined in the previous section.

The task users were asked to perform is the “Write review” task (defined in section 3.3).

The additional assumptions for the experiment are the following:

- each user needs to write and publish a review for the course “Cybersecurity” of the “Engineering in Computer Science” degree course with the text “Good course” (we deliberately chose short and simple strings of text to be inputted in the search fields or review form’s fields to avoid final measurements being significantly influenced by the user’s text typing speed);
- each user is assumed to have already registered a user account for the website, with the username “user” and the password “password”: these can be used to fill the required fields of the “login” page whenever the user needs to authenticate.

For each performed test, the time the user needed to write the review was measured using a stopwatch and later used for the final analysis.

8.8 Analysis of the results - ANOVA

For the analysis of the collected results, we used the “ANOVA” single factor statistical analysis. The single factor “ANOVA” (analysis of variance) is a statistical technique based on the F-test which is employed to test the variance among two or more groups of data in the case in which the variance depends only on a single factor.

We used the “Analysis ToolPak” add-on in “Microsoft Excel” to obtain a report for our ANOVA single factor analysis.

We provided a table with the collected data, containing the time needed to execute the task for the two versions of the interface, A and B, for each of the test users.

The following table contains the collected data, with the measured times (in seconds):

Users	Interface A	Interface B
1	129	148
2	89	159
3	130	144
4	109	123
5	127	104
6	93	136
7	100	145
8	138	130
9	119	168
10	131	111
11	133	116
12	124	130
13	130	152
14	146	143

The resulting ANOVA single factor analysis report, obtained using the aforementioned “Microsoft Excel” “Analysis ToolPak” extension, contains:

- a general summary of some of the quantities computed for the input data, such as the sum of the times, the average and the variance;
 - the results of the analysis, containing, above all, the F and F-critical values, used to accept or reject the null hypothesis.
-

The following tables contain a summary of the input data considered for our analysis as well as the ANOVA single factor analysis report results:

SUMMARY				
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	14	1698	121,2857143	294,2197802
Column 2	14	1909	136,3571429	341,1703297

ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	1590,03571	1	1590,035714	5,00491175	0,034065691	4,22520127
Within Groups	8260,07142	26	317,6950549			
Total	9850,10714	27				

The following is a screenshot of the ANOVA report as it appears in “Microsoft Excel”:

Interface A	Interface B					
129	148					
89	159					
130	144					
109	123					
127	104					
93	136					
100	145					
138	130					
119	168					
131	111					
133	116					
124	130					
130	152					
146	143					
Anova: Single Factor						
SUMMARY						
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
Column 1	14	1698	121,2857143	294,2197802		
Column 2	14	1909	136,3571429	341,1703297		
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	1590,035714	1	1590,035714	5,004911753	0,034065691	4,225201273
Within Groups	8260,071429	26	317,6950549			
Total	9850,107143	27				

As we can see from the given report, we obtained:

$$F > F_{crit} \text{ as we have } 5,0049 > 4,2252.$$

This leads us to the conclusion that the null hypothesis (stating that there is no significant difference in time with respect to the two interfaces) can be rejected. The two examined populations (the times employed by the users for writing a review with version A and B respectively) are therefore not equal, and the “alternative hypothesis” (the two interfaces lead to different task execution times) holds.

The threshold for the significance level used to perform the analysis is 0.05 (5%). Since we obtained a P-value (0.034) which is less than the significance level (0.05), it follows that the previous result is significant and it was caused by the changes in the independent variables (the two different versions of the interface).

We can ultimately conclude that, with statistical significance, the time needed to execute the “write review” task is generally higher for interface B than the time needed for interface A.

This result is in line with what we expected: version A follows platform and industry conventions (which is one of Nielsen’s usability heuristics) by providing a button to prompt the insertion of a review (which we suppose our test users actively searched for, in both version A and version B), rather than an already available form with no button whatsoever.

Furthermore, version A provides a clear feedback after the press of the “Add your review” button in the case of the user not being logged in, which immediately brings the user attention to the pop-up appearing after the press of the button and specifying that the user needs to login first before submitting its review.

In version B, instead, the user needs to notice this “login needed” warning message without any previous interaction with elements of the interface, which should be slower than the previously described version since, in this case, the user isn’t expecting any visual feedback from the system itself.

We therefore decided to keep using version A of the interface for the final product, and discarded version B, but only after making version A’s button more noticeable in the final system’s prototype (as explained in the next section of this document).

9. Final System Implementation

The final version of our system's website includes all the fixes and the improvements resulting from the expert evaluation and user based evaluation phases.

In particular, other than the changes implemented for the first working version of our system (the second prototype, following the expert evaluation phase), we introduced the following changes and fixes to the overall design of the system:

- In the “complete user profile” page, we reduced the number of selectable tags to avoid discouraging users from completing their profile and skipping that phase because of a too large number of options (we observed this behavior for some of the testers during our “think aloud” sessions);
- In the “complete user profile” page, we collapsed by default each of the sections containing selectable tags (representing a certain category), while also adding a checkbox allowing to select or deselect all the tags of the section itself (which would also expand the respective section to let users see and edit the selected tags);
- In the navigation bar (on top of each page), we replaced the “Search” button next to the search bar with a button displaying the text “Advanced Search” until the user starts typing search terms in the search page, which would dynamically change the text of the button to “Search” (this was done in response to the difficulties encountered by some of our test users to access the “Advanced Search” page during our “think aloud” sessions);
- In the “Course page”, for each of the reviews for a certain course, we made the text specifying whether a reviewer attended the course or not more noticeable, in particular by differentiating the text for the two possible cases (this was one of the changes our testers suggested during our “cooperative evaluation” sessions);
- In the “complete user profile” page, we also changed the “Skip this course” link on top of the page with a more noticeable button (as suggested by our tester for the “post-task walkthrough”);
- We added a “Back to top” button in all of the website’s pages, added additional filters in the Advanced Search page and then reordered them to better reflect their usefulness and importance based on our test users’ suggestions (mostly coming from the interviews we conducted);
- Putting together both the results of the “controlled experiment” and the suggestions from our “cooperative evaluation” and interviewed testers, we made the button to insert a user review in the “course page” more noticeable by adding a looping animation to it (the same animation that was added to highlight the “compare course” button and which seemed to actually make the button noticeable enough for our test users during the “course comparison” task testing).

The following images show our final system’s prototype, with all the introduced changes and fixes (described above).

Welcome to Course4U

Your personal **course discovery hub**.



What can you do here?

- ⌚ Access **detailed information for over 50.000 university courses** from various **degrees and categories**
- ⌚ **Search for courses using detailed search filters** with our **Advanced Search**
- ⌚ **Login to your account** to **get suggestions about courses you may like** and write your own reviews
- ⌚ **Easily compare courses' information** using our **course comparison tool**

Your Suggested Courses

 Refresh suggested courses

Algorithm Design

Bachelor: Informatics (2021/2022)

4 ★★★★★ (75) 9 CFU • Second semester • 54 hours • Italian

Description: Programme The first part deals with graphs and visits (DFS and BFS). In part II we introduce certain techniques (greedy and divide-et-impera) which work for special kinds of problems. Part III deals with techniques that are powerful and general: dynamic program and...

Databases | Module II

Bachelor: Informatics (2022/2023)

4.1 ★★★★★ (29) 6 CFU • Second semester • 60 hours • Italian

Description: Programme 1. Introduction and electives in software engineering: actors and software life cycle (around 10% of the lectures) 2. Conceptual analysis of application requirements (around 50% of the lectures) 2.1. Conceptual analysis of data requirements via ER diagrams...

Mathematical Methods for Information Eng

Bachelor: Electronics Engineering (2021/2022)

3.8 ★★★★★ (31) 6 CFU • Second semester • 60 hours • English

Description: Programme R^n space. Directional Derivatives. Differentiability. Convex sets and convex functions. Characterizing properties. Convexity and optimization. Local and global minima (maxima). Constrained optimization. Lagrange multiplier metho...

General Physics II

Bachelor: Electronics Engineering (2020/2021)

3.9 ★★★★★ (52) 12 CFU • First semester • 120 hours • Italian

Description: Programme 25 hours: Electrostatics in vacuum - Electric and Potential field. Electric force; electric charge and Coulomb's law; the electric field; electrostatic field generated by some charge distribution. Gauss theorem; the first Maxwell equation; the electric potential. The...

Course Categories



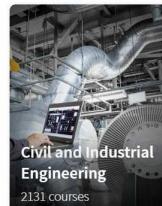
Architecture

724 courses



Arts and Humanities

6321 courses



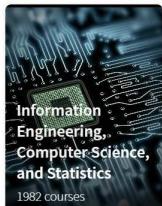
Civil and Industrial Engineering

2131 courses



Economics

921 courses



Information Engineering, Computer Science, and Statistics

1982 courses



Law

516 courses

Popular Courses

Human Sciences | Bioethics

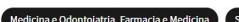
Bachelor: Dental Hygiene (2020/2021)

4 ★★★★★ (64) 1 CFU • Second semester • 10 hours • Italian
Description: No description available for this course

Health Services Law and Organization | I...

Bachelor: Dental Hygiene (2020/2021)

3.9 ★★★★★ (69) 1 CFU • Second semester • 10 hours • Italian
Description: Programme INFORMATION PROCESSING SYSTEMS Search of data and documentary sources on the net This module will address the issue of searching for information and documents from appropriate sources. Such a simple problem, useful also for assessing and adjusting...

Basic Techniques and Instruments In the...

Bachelor: Biomedical Laboratory Techniques (2020/2021)

4.1 ★★★★★ (33) 1 CFU • First semester • 10 hours • Italian
Description: Programme Proteomics analysis and genetic analysis in pathological anatomy, in-situ analytical methods. analysis of in-situ biomarkers. Tissue Micro Array TMA, biological banks Gene alterations and mutations FISH and CISH in-depth study of DNA extraction,...

Mathematics, Level I

Bachelor: Architectural Sciences (2021/2022)

3.9 ★★★★★ (79) 8 CFU • First semester • 100 hours • Italian
Description: No description available for this course

[Explore all courses >](#)



Search filters

! Categories

- Architecture
- Arts and Humanities
- Civil and Industrial Engineering
- Economics
- Information Engineering, Computer Science, and Statistics
- Law
- Mathematics, Physics, and Natural Sciences
- Medicine and Dentistry
- Medicine and Psychology
- Pharmacy and Medicine
- Political Science, Sociology, and Communication Science

[Reset Categories](#)

CFUs

Tags

! Academic Year

Degree Course Type

Lessons Period

Language

Rating

Total hours

Search results for "cybersecurity"

Sort by: Relevance

View: Detailed

Cybersecurity

Bachelor: Applied Computer Science and Artificial Intelligence (2022/2023)

Ingegneria Dell'Informazione, Informatica e Statistica

Informatica

Applied Computer Science and Artificial Intelligence

Cy



4.1 ★★★★★ (36)

6 CFU • First semester • 60 hours • English

Description: Programme (Tentative) Computer Security Concepts Cryptographic tools User Authentication Access Control Malicious Software Denial-of-Service Attacks Intrusion Detection Firewalls and Intrusion Prevention Systems Buffer Overflow Software Security Operating System Security Trusted Computing and Multilevel Security IT Security Management and Risk Assessment IT Security Controls, Plans, and Procedures Physical and Infrastructure Security Human Resources Security Security Auditing Legal and Ethical Aspects Symmetric Encryption and Message Confidentiality Public-Key Cryptography and Message Authentication Internet Security...

Cybersecurity

Master: Engineering In Computer Science (2022/2023)

Ingegneria Dell'Informazione, Informatica e Statistica

Ingegneria Informatica, Automatica e Gestionale 'Antonio Ruberti'

Engin



4 ★★★★★ (47)

9 CFU • First semester • 90 hours • English

Description: Programme Symmetric and asymmetric cryptography.Hash functions (keyed, unkeyed). Operational modes. Secret sharing. Authentication. Digital signature. Access control. Securing email and OpenPGP. HTTP3 and Quic. Application security. Tor Adopted texts C. Kaufman, R. Perlman, and M. Speciner. Network Security - Private communication in a Public World. II ed. Prentice Hall PTR, Upper Saddle River, NJ, 2002 Lecture notes by the teacher Bibliography William Stallings. Network Security Essentials: Applications and Standards, Global Edition. Editor: Pearson Education Limited, 2016 Prerequisites To know internetworking, TCP/IP, routing Study modes...

Statistics

Master: Cybersecurity (2022/2023)

Ingegneria Dell'Informazione, Informatica e Statistica

Informatica

Cybersecurity

Statistics



4 ★★★★★ (30)

6 CFU • First semester • 60 hours • English

Description: Programme See online material https://www.datatime.eu/public/cybersecurity/Statistics_2020_21/ https://www.datatime.eu/public/cybersecurity/Statistics_2021_22/ Adopted texts All the material is already present on the web Prerequisites No prerequisites Study modes Didattica frontale/tradizionale e Didattica a distanza Frequency modes Didattica frontale/tradizionale e Didattica a distanza Exam modes Written (project or thesis) and oral exam

Data and Network Security

Master: Cybersecurity (2022/2023)

Ingegneria Dell'Informazione, Informatica e Statistica

Informatica

Cybersecurity

Data and Network Security



3.9 ★★★★★ (36)

6 CFU • Second semester • 60 hours • English

Description: Programme The course of "Data and Network Security" is structured in two main parts: Background and Literature analysis. The Background part introduces the main concepts that are used in the rest of the course that include: Introduction to cybersecurity, Identification and authentication, Virus, trojan and covert channels, Analysis of the most widespread attacks, Operating system security, Security of group communications, Security in wireless networks. The Literature analysis part focuses on the main open research problems in the field. Some of the research problems faced fall into areas that include the following: Anonymous communications, Blockch...

Practical Network Defense

Master: Cybersecurity (2022/2023)

Ingegneria Dell'Informazione, Informatica e Statistica

Informatica

Cybersecurity

Practical Network Defense



3.8 ★★★★★ (21)

6 CFU • Second semester • 60 hours • English

Description: Programme • Network hardening : This topic covers ways to help the network defend itself from unauthorized access. • Defense in depth : This topic introduces the idea that defenses must be layered. • Implementing IDS/IPS : This topic covers intrusion detection and intrusion prevention services. These services audit the network traffic. • Implementing firewalls and virtual private networks (VPNs) : This topic covers the installation and use of firewalls and virtual private networks (VPNs). • Defending against DDoS attacks : This topic introduces the idea of providing intentionally vulnerable services to attract and distract attackers so that they can be...

[Show more results](#)

Cybersecurity

Master: Engineering In Computer Science (2022/2023) • First year • First semester

Course status: Undefined

ADVANCED COURSE Ingegneria dell'informazione, informatica e statistica Ingegneria informatica, automatica e gestionale "antonio ruberti"

Engineering in computer science Cybersecurity

9 CFU (90 hours) • Lessons period: September - December

4.0 ★★★★☆ (47 reviews)

[Compare this course with another course >](#)

[Visit course's official page](#)

Course Description

[Hide description](#)

Programme

Symmetric and asymmetric cryptography: Hash functions (keyed, unkeyed), Operational modes, Secret sharing, Authentication, Digital signature, Access control. Securing email and OpenPGP, HTTP3 and Quic. Application security, Tor.

Adopted texts

C. Kaufman, R. Perlman, and M. Speciner. Network Security - Private communication in a Public World. II ed. Prentice Hall PTR, Upper Saddle River, NJ, 2002.

Lecture notes by the teacher

Bibliography

William Stallings. Network Security Essentials: Applications and Standards, Global Edition. Editor: Pearson Education Limited, 2016

Prerequisites

To know internetworking, TCP/IP, routing

Study modes

Carried out in classroom, with remote transmission of the lecture.

Frequency modes

Attendance is recommended.

Exam modes

Written exam, possibly with discussion and verification of homeworks (optional)

Exam reservation date start	Exam reservation date end	Exam date
09/12/2022	07/01/2023	09/01/2023
18/01/2023	01/02/2023	03/02/2023
18/01/2023	31/03/2023	06/04/2023
07/06/2023	18/06/2023	21/06/2023
07/06/2023	11/07/2023	14/07/2023

Course Objectives

[Hide objectives](#)

Objectives information not yet available.

Teachers



FABRIZIO
D'AMORE

[Teacher's Page](#)



EMILIO COPPA

[Teacher's Page](#)

Other Infos

SSD

ING-INF/05

Code

10600393

Faculty

Ingegneria
dell'informazione,
informatica e statistica

Department

INGEGNERIA
INFORMATICA,
AUTOMATICA E
GESTIONALE "ANTONIO
RUBERTI"

Degree Course

Engineering in Computer
Science

Degree Type

Masters

Curriculum

Ingegneria Informatica
(percorso valido anche ai
fini del conseguimento
del doppio titolo italo-
venezuelano o italo-
russso)

Miscellaneous

Attività formative
caratterizzanti

Ambito disciplinare:

Ingegneria informatica

Exercise (Hours): 36

Lecture (Hours): 54

Course Reviews

4.0 ★★★★☆

47 total reviews

[Sort reviews by: Date \(descending\) ▾](#)



[Add your review](#)

Noah Adams

★★★★★ 4/5

Reviewer attended this course

June 27, 2022

Jack Clark

★★★★★ 3/5

Reviewer attended this course

April 30, 2022

Dwayne Johnson

★★★★★ 5/5

Reviewer did NOT attend this course

April 14, 2022

Didn't attend, so can't comment, but course programme is very interesting and well-structured.

James Smith

★★★★★ 3/5

Reviewer attended this course

April 12, 2022

I had high hopes for this course, but it fell short in some aspects. The content was relevant, but the course materials needed updating. The professor was knowledgeable but lacked enthusiasm. It's an average course that could be improved with some revisions.

Aria Smith

★★★★★ 2/5

Reviewer did NOT attend this course

March 20, 2021

Unfortunately, I didn't get a chance to attend this course due to scheduling conflicts. I can't provide a rating for the content, but the registration process was a bit complicated. I hope to enroll next time.



Course comparison (comparing 3 courses)

You can compare up to 3 courses at a time: to remove a course, click on the "Remove course from comparison" button.

Remove course from comparison	Remove course from comparison	Remove course from comparison
Distributed Systems	Dependable Distributed Systems	Distributed Systems and Comp and Network Security
CFU: 6	CFU: 9	CFU: 12
First Year - First semester	First Year - First semester	First Year - First semester
Language: English	Language: English	Language: English
Degree Course (Master): Computer Science (2022/2023)	Degree Course (Master): Engineering In Computer Science (2022/2023)	Degree Course (Master): Engineering In Computer Science (2020/2021)
Faculty: Ingegneria dell'informazione, informatica e statistica	Faculty: Ingegneria dell'informazione, informatica e statistica	Faculty: Ingegneria dell'informazione, informatica e statistica
Department: INFORMATICA	Department: INGEGNERIA INFORMATICA, AUTOMATICA E GESTIONALE "ANTONIO RUBERTI"	Department: INGEGNERIA INFORMATICA, AUTOMATICA E GESTIONALE "ANTONIO RUBERTI"
Teachers: ALESSANDRO MEI	Teachers: SILVIA BONOMI, Giovanni Farina	Teachers: SILVIA BONOMI, EMILIO COPPA
Level: Advanced	Level: Advanced	Level: Advanced
Lessons Period: September - December	Lessons Period: September - December	Lessons Period: September - December
Course Code: 1047624	Course Code: 10599896	Course Code: 1044419
SSD: INF/01	SSD: ING-INF/05	SSD: ING-INF/05
Hours: 60 hours	Hours: 90 hours	Hours: 120 hours
Curriculum: Multimedia Computing and Interaction	Curriculum: Ingegneria Informatica (percorso valido anche ai fini del conseguimento del doppio titolo italo-venezuelano o italo-russo)	Curriculum: Ingegneria Informatica (percorso valido anche ai fini del conseguimento del doppio titolo italo-francese, italo-venezuelano o italo-russo)
Other Infos: Attività formative caratterizzanti Ambito disciplinare: Discipline Informatiche Exercise (Hours): 24 Lecture (Hours): 36	Other Infos: Attività formative caratterizzanti Ambito disciplinare: Ingegneria informatica Exercise (Hours): 36 Lecture (Hours): 54	Other Infos: Attività formative caratterizzanti Ambito disciplinare: Ingegneria informatica Exercise (Hours): 48 Lecture (Hours): 72



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INFORMATICA

INGEGNERIA INFORMATICA, AUTOMATICA E GESTIONALE "ANTONIO RUBERTI"

INGEGNERIA DELL'INFORMAZIONE, ELETTRONICA E TELECOMUNICAZIONI

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Law ▾

SCIENZE GIURIDICHE

STUDI GIURIDICI ED ECONOMICI

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10. Conclusions and Future Developments

Our decision to embark on this project was driven by two main factors. Firstly, as students ourselves, we intimately understand the challenges and roadblocks that students encounter when navigating the complex world of course selection. This personal experience fueled our desire to create a solution that not only addressed these common student problems but also offered a system for which we could easily find testers and collaborators (our fellow students).

The main reasons presented above initially led us to consider a very different idea from what we ended up developing for our final system: our focus was geared toward assisting fellow students with their study materials, but, as a first user requirements gathering phase made us realize, this concept did not align with the genuine needs of other students.

We therefore decided to abandon this initial idea (as we were still only in the initial phases of development) and try to come up with a better one.

The work done for the abandoned project, in particular the questionnaires submitted to some of our colleagues, however, still helped us pivot the original concept into what later became our final project idea: the “Course4U” system.

Our system was deliberately crafted to be scalable and adaptable. While initially focused on courses of the Sapienza university (our university), our database, as of how we designed it, was created to be as modular as possible, to ensure that an eventual integration with courses from new institutions can be a straightforward process.

As we look ahead to possible future developments, one of the most important aspects our system should introduce and enhance is community involvement. We envision allowing users to suggest edits to course’s information and propose to add and remove tags for each of our database’s courses.

Given that our system is designed by students and intended for students, it only makes sense to involve the very individuals who benefit from it in its ongoing evolution.

“User Centered Design” principles will therefore continue to guide our efforts, ensuring that our system remains dynamic and responsive to user needs even long after its initial launch.

Another important aspect to tackle for our system is the active participation of educators. Our user requirements analysis and experiments have brought to light various features that would greatly enhance our system, but that are contingent on the involvement of teachers and course administrators. Allowing the latter to contribute to the system by populating courses’ information would be a significant stride towards its comprehensiveness and accuracy. Teachers should ultimately be encouraged to participate in the active development of our system (with the awareness of the fact that active teachers’ involvement would still be a hard challenge to solve).

Looking even further into the future, we envision the inclusion of courses provided not only by universities, but also by private organizations and individuals. Our system could transform into a comprehensive showcase of courses offered by a diverse range of entities. This expansion would empower individuals seeking to acquire new skills or knowledge to discover the optimal learning opportunities, while also providing all the pertinent information required to take the next step and enroll in a course through their official channels and portals.

Ultimately, our aspiration for the final system is for it to become the definitive platform for individuals eager to explore courses across various fields. We envision it as the “go-to” resource, simplifying the course selection process and fostering a vibrant community of students, teachers, and lifelong learners.

This vision propels us forward as we continue to refine and expand our system, driven by the commitment to make education more accessible and informed for all, starting from our fellow Sapienza students.