

Course4U

University courses' search and discovery system

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“Engineering in Computer Science” Master’s Degree - **Human Computer Interaction** (2022/2023)

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Introduction

Project Idea

We considered **3 main aspects** for coming up with ideas:

- 1) We are **students** (we know lots about **study, school and university**)
→ We restricted our focus towards **study-related ideas**
- 2) We needed an idea for which it would be **easy to find testers and collaborators** (based on the “**User Centered Design**” system development framework)
→ We oriented the system’s idea mainly **towards fellow university students**
- 3) We know **common problems** university students face
→ We focused on **solving one or more of these problems**

Project Idea - Iteration 1

Project idea: system for assisting university students with **study material**
(provide a platform to **share and retrieve** personal notes and related study material)

We identified our **user profile** and performed a **competitor analysis**
(found out about **well affirmed competitors** with their offered features and flaws)

We distributed **user questionnaires** in various university students' groups
(mainly **outside of our degree course** and also **outside of our university**)

Results from the questionnaire led us to **drop this initial idea**
(results were **very helpful** to find a new idea aimed towards the **same user base**)

Project Idea - Iteration 2

Original Project Idea

System for **searching** and **discovering** Sapienza University courses

In-depth **courses** information retrieval and **advanced search**

“**Tag-based**” courses **recommendations** and discovery

Final Project Idea

Additional system features resulting from **community involvement**

User **reviews**, courses **bookmarks** and easy **course information comparison**

Possible expansion outside of just Sapienza University courses

Competitors

Sapienza University Website

Official degree courses catalogue
for Sapienza University of Rome

Advantages

- Various search filters available
- Search for teachers' information
- Wide selection of degree courses

Disadvantages

- Search restricted to degree courses
- No course comparison feature
- No reviews by other students

Coursera

Discovery platform for **single courses**,
degree courses and **certifications**

Advantages

- Various search filters available
- Courses FAQ and user reviews
- Universities and companies partnership
- Stream purchased courses' lessons

Disadvantages

- Products and information heterogeneity
- Registration needed for various features

Udemy

Discovery platform for **online courses** on various topics **taught by other users**

Advantages

- Various search filters available
- User reviews
- Personalized course suggestions
- Publish online courses for other users
- Stream purchased courses' lessons

Disadvantages

- No accredited courses
- No quality control for published courses
- Courses' information heterogeneity
- Registration needed for various features

Masterclass

Discovery platform for **online courses**
taught by **professionals** and **field experts**

Advantages

- Courses taught by field experts
- Subscription for entire catalog access
- Search for teachers' information

Disadvantages

- No advanced search
- No course comparison feature
- Registration needed for various features

| | Sapienza's Website | Coursera | Udemy | Masterclass | Course4U |
|--------------------|--------------------|----------|-------|-------------|----------|
| Accredited Courses | YES | YES | NO | NO | YES |
| Search by Topics | NO | YES | YES | YES | YES |
| Search Teachers | YES | NO | NO | YES | NO |
| Advanced Search | NO | YES | YES | NO | YES |
| Buy Courses | NO | YES | YES | YES | NO |
| F.A.Q. | NO | YES | NO | NO | NO |
| Users Reviews | NO | YES | YES | NO | YES |
| Compare Courses | NO | NO | NO | NO | YES |

User Requirements Analysis

User Profile

We identified **university students** and
professionals interested in career development
as the main user base of our system

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

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.



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 courses' 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.

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.

Personas & Scenarios - General Summary

Luca

Sapienza **student**
20 years old

Studies **Computer Science**

Seeks a platform for
course discovery

Wants to make informed
courses selections

Alice

Hospital **nurse**
34 years old

Needs **CME credits**

Has a **busy schedule**

Seeks **online courses**

Needs an easy to use
platform for course info

Rafael

Erasmus **student** from Spain
20 years old

Studies **Energy Engineering**

Needs a user-friendly **course selection tool**

Wants to explore **Sapienza's academic offerings**

Questionnaires

User Questionnaires

- 1) “Adaptive” questionnaires created using Google form
- 2) Distribution over **Telegram**, **Whatsapp** and **Discord** groups
(students groups, CME communities and unofficial Sapienza groups)
- 3) **84 total responses** collected
- 4) Creation of report and graphs for gathered data analysis

University Courses Discovery System (Questionnaire)

The following is a brief questionnaire for the development of a system for searching and discovering University courses (free choice courses, single courses, etc.) based on user interests and preferences.

Time to complete: 2-3 minutes.

distefano.1898728@studenti.uniroma1.it [Cambia account](#)

 Non condiviso

* Indica una domanda obbligatoria

Are you a university student? *

Yes

No

What is your age?

17 or below

18-24

25-34

35-49

50 or above

What is your gender?

Male

Female

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?

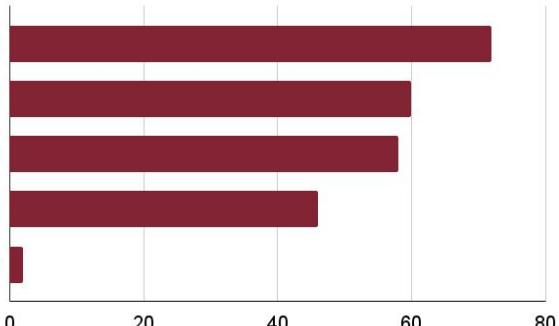
Subject area (e.g., Mathematics, Biology, Computer Science)

Course level (e.g., Introductory, Advanced)

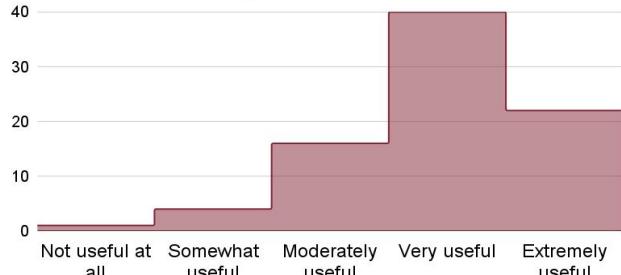
Skills developed (e.g., Critical thinking, Problem-solving, Technical skills)

Teaching format (e.g., Lecture, Seminar, Online)

Specific competences and eventual technologies



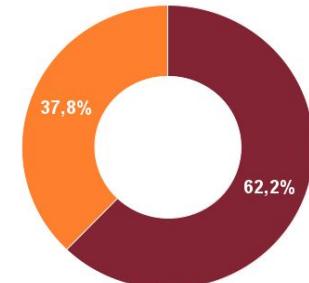
How useful would it be to search for a course primarily based on your interests and in line with your career?



What is your current role or status at the university?

Graduate student

Undergraduate student



User Questionnaires - Responses

- Majority are **graduated students** from Sapienza University, **aged 18-24**
- Majority attended **non-mandatory courses' lessons** (even if not required)
- Courses **bookmarks** are considered useful
- Most important courses information:
 - **Course description**
 - **Assessment methods**
 - **CFUs**
 - **User reviews**
- Courses chosen based on:
 - **relevance to career path**
 - **relevance to degree**
 - **topics of interest**
 - **other students recommendations**
- Majority browses through courses **only when strictly necessary**
- Majority is **not satisfied** with the **course search system** at their university
(cannot compare courses, find relevant infos or choose between available all options)

Interviews

Interviews - User Requirements Gathering

Additional questions arising from user questionnaires answers:

- Would a “**tag-based**” **system** to search for courses **be useful**?
- Would users mainly use such system on **mobile or desktop**?
- Would user **trust other students reviews**?
- Have users ever attended courses **not meeting their expectations**?
- Other questions about specific user needs...

Interviewee #1 - Marco

23-year-old - Electronics Engineering Master Sapienza student

Challenges and Issues:

- Unclear course registration / enrollment process
- Lack of comprehensive syllabus information

User Efforts:

- Actively seeks courses with **specific attributes** (CFUs, language, subjects, ecc...)

Comparison to Other Platforms:

- Absence of dedicated sections for in-depth course information on university websites

User Suggestions:

- Provide **detailed information** for each course
- Advanced search feature for course discovery

Interviewee #2 - Modesta

54-year-old - Midwife at San Giovanni Evangelista hospital

Challenges and Issues:

- Difficulty in **finding CME courses efficiently**
- Time-consuming **search across multiple platforms**

User Needs:

- **Unified platform** for discovering university courses
- Evaluating courses' **relevance and suitability**

Tag-Based System:

- Importance of a "**tag-based**" system for searches
- Relevant tags: **subject areas, keywords and topics**

User Suggestions:

- Recommendation system based on **favorite tags**
- Allows users to **contribute tags** for existing courses

Interviewee #3 - Laura

21-year-old - Computer Science Bachelor Sapienza student

Challenges and Issues:

- Hard to **compare different courses** effectively
- Confusion with courses having **different names** but **similar contents** and **vice-versa**

User Needs:

- Streamlined **course comparison process**
- Structured and consistent **course information**
- Importance of **course content, prerequisites, outcomes**, and **assessment methods**

User Suggestions:

- **Side-by-side detailed course comparison feature** (allows for more **informed** and **efficient decisions**)

Interviewee #4 - Simone

27-year-old - Graduated Electronics Engineer (Sapienza)

Challenges and Issues:

- Getting **other student's recommendations**
- Lack of **immediate responses** in student groups
- **Repetitive questions / answers** in student groups

User Needs:

- **Dedicated platform for course recommendations**
- **Browse other students' reviews** on specific courses

User Suggestions:

- Course information page with a **dedicated section for students' reviews**
- **Actively involve the community** for mutual information exchange and help

Interviews - Main takeaways

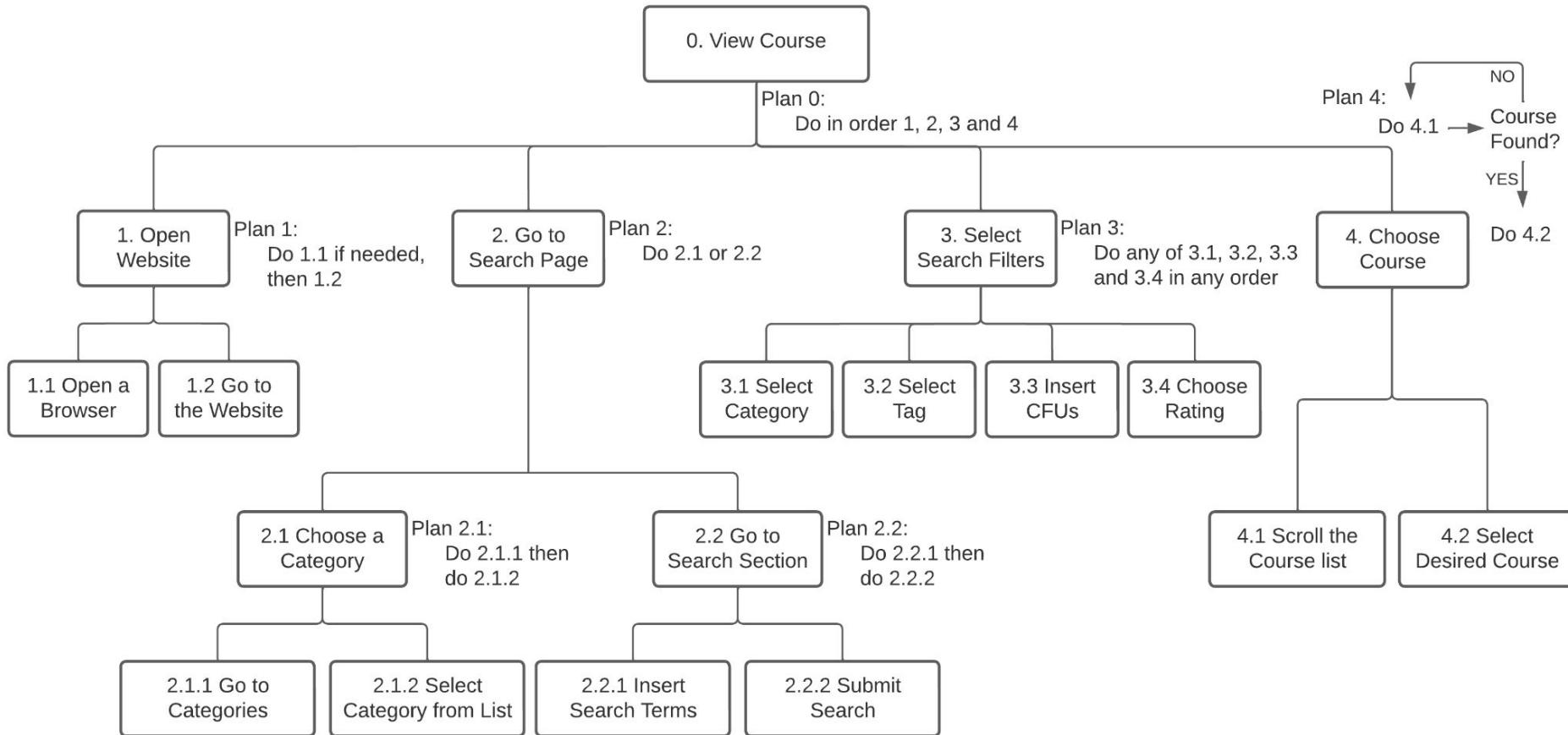
- 1) Focus on a **desktop application** (users browse for courses mainly on PC)
- 2) Provide detailed and comprehensive **course search tools**
- 3) For each course, provide **all available information and details**
- 4) Include a dedicated section for **user reviews** in courses' information page
- 5) Implement a **side-by-side course information comparison**

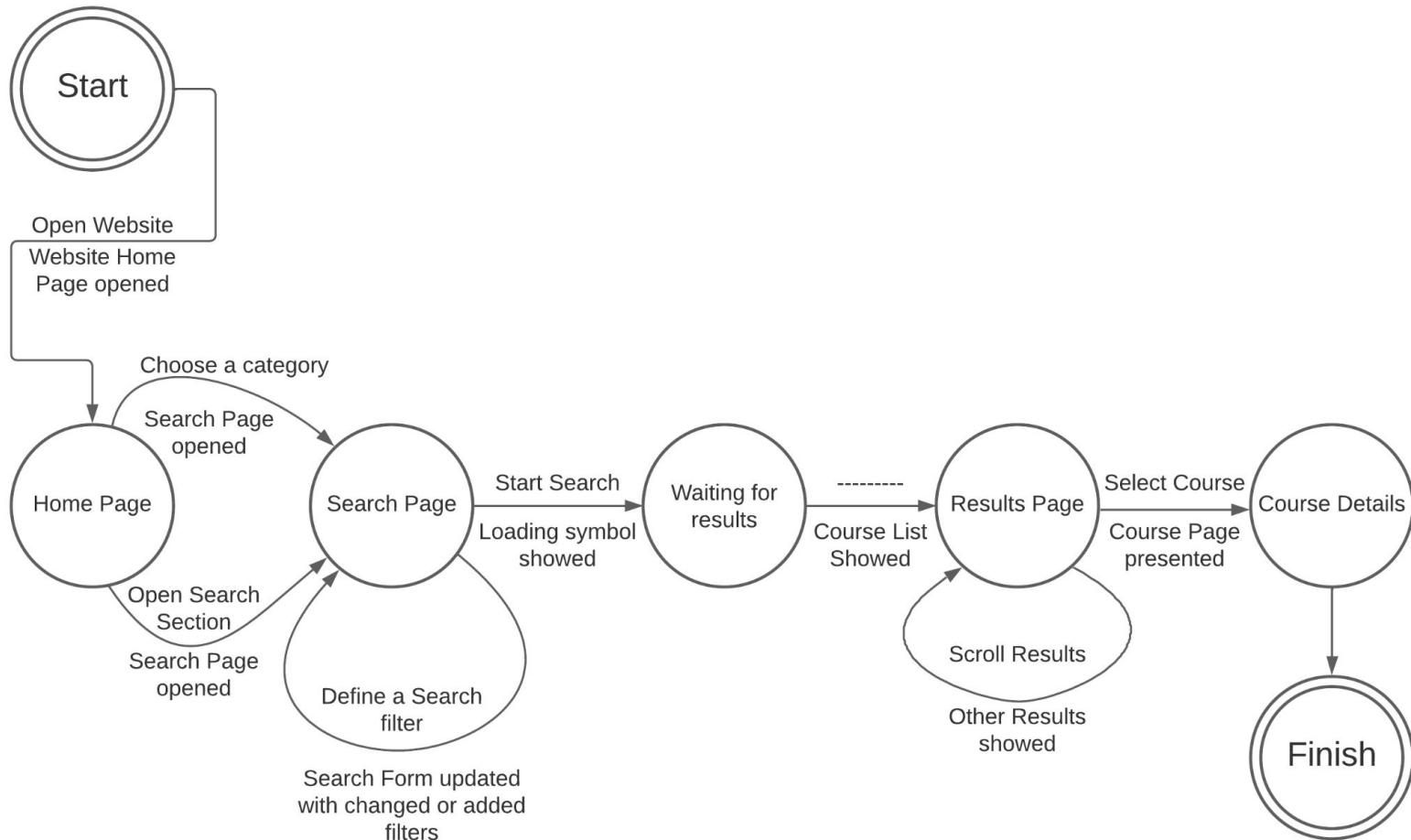
Task Analysis

View Course

Access information for a course:

- **land** on the website's home page
- **navigate** to the search page
 - **insert the search terms** in the search bar in the home page
OR
 - **choose a specific category** from the home page
- **select or insert** the desired **search filters**
- **scroll** through the search **results** and choose the course

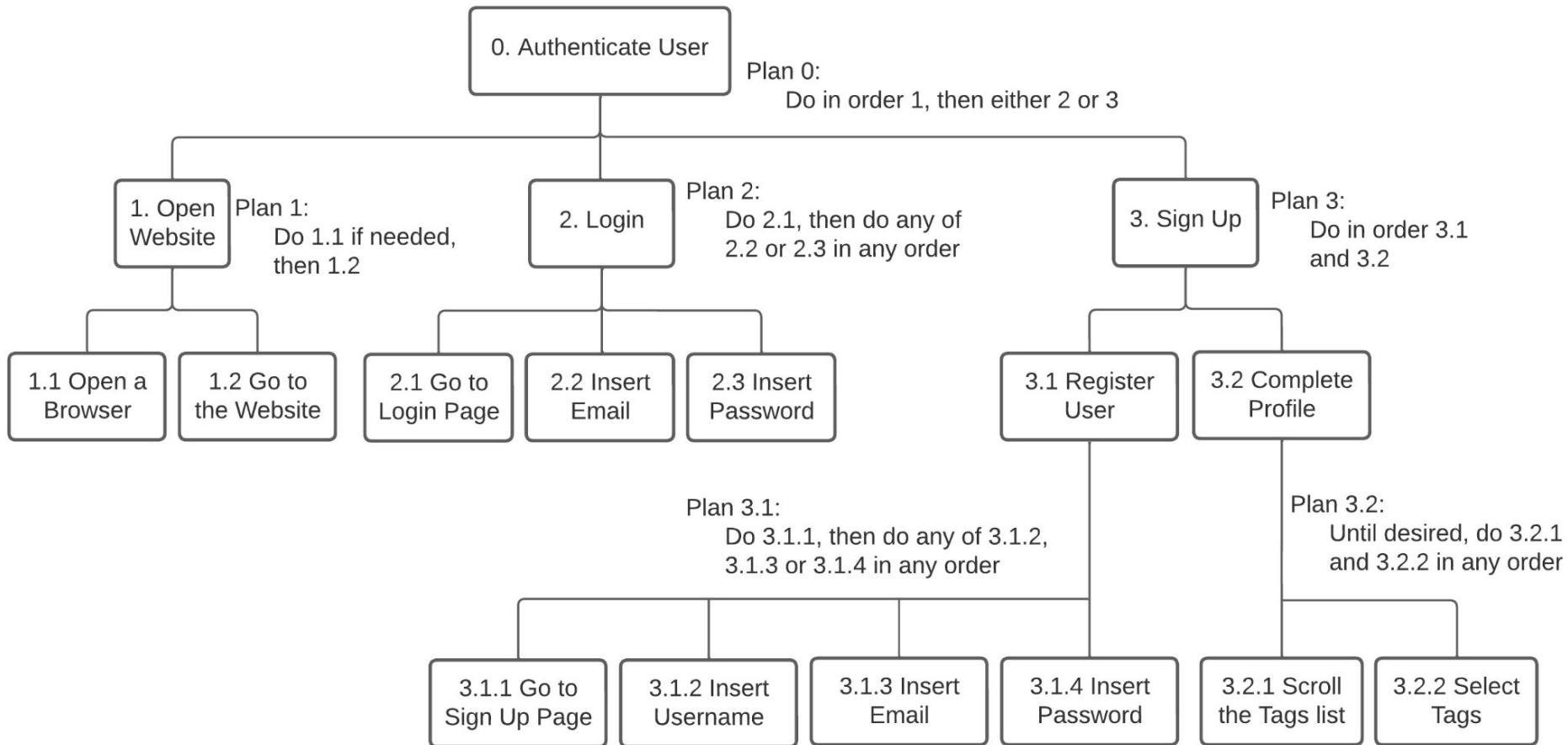


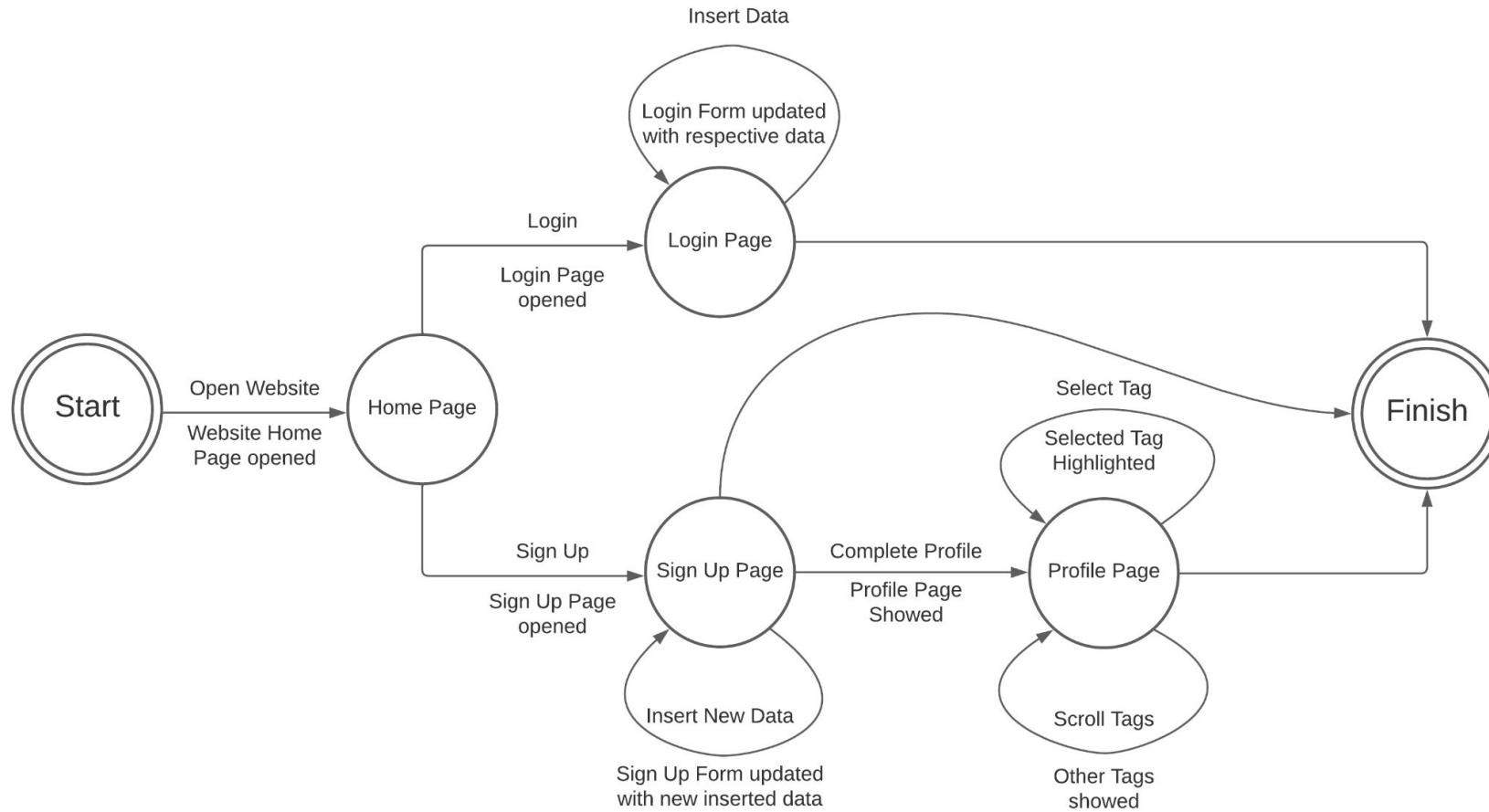


Authenticate User

Authenticate in the Website:

- **land** on the website's home page
 - **perform** the login
- OR
- **sign up**
 - **register** a new profile
 - optionally **complete** the profile

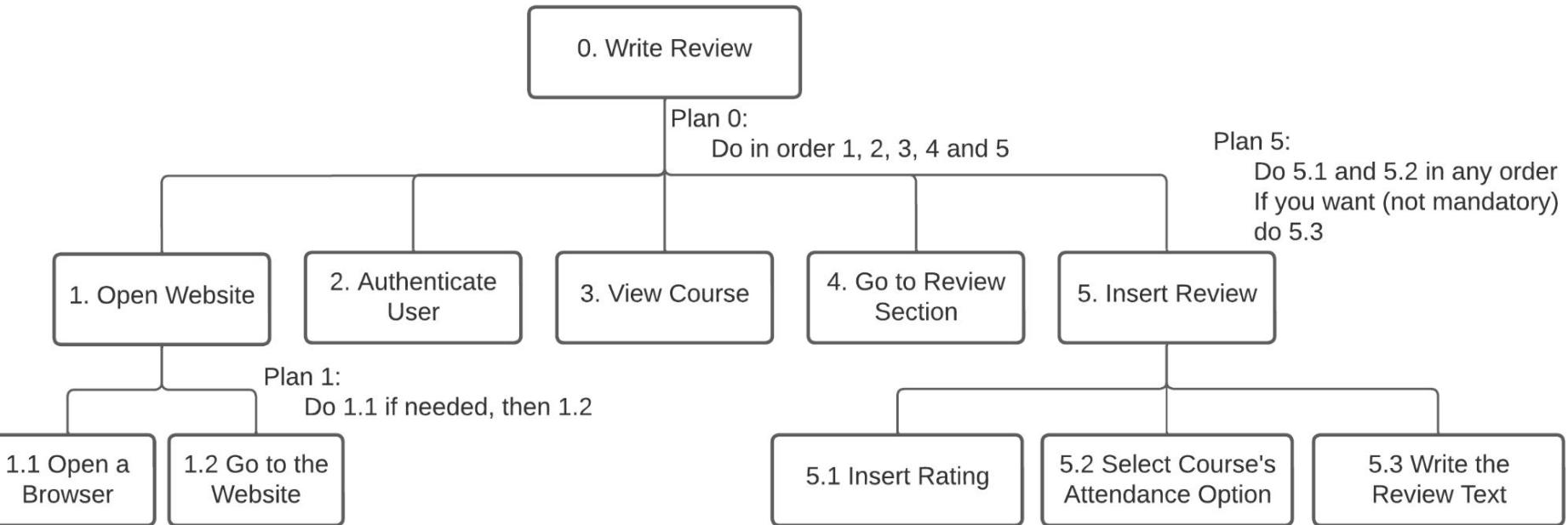


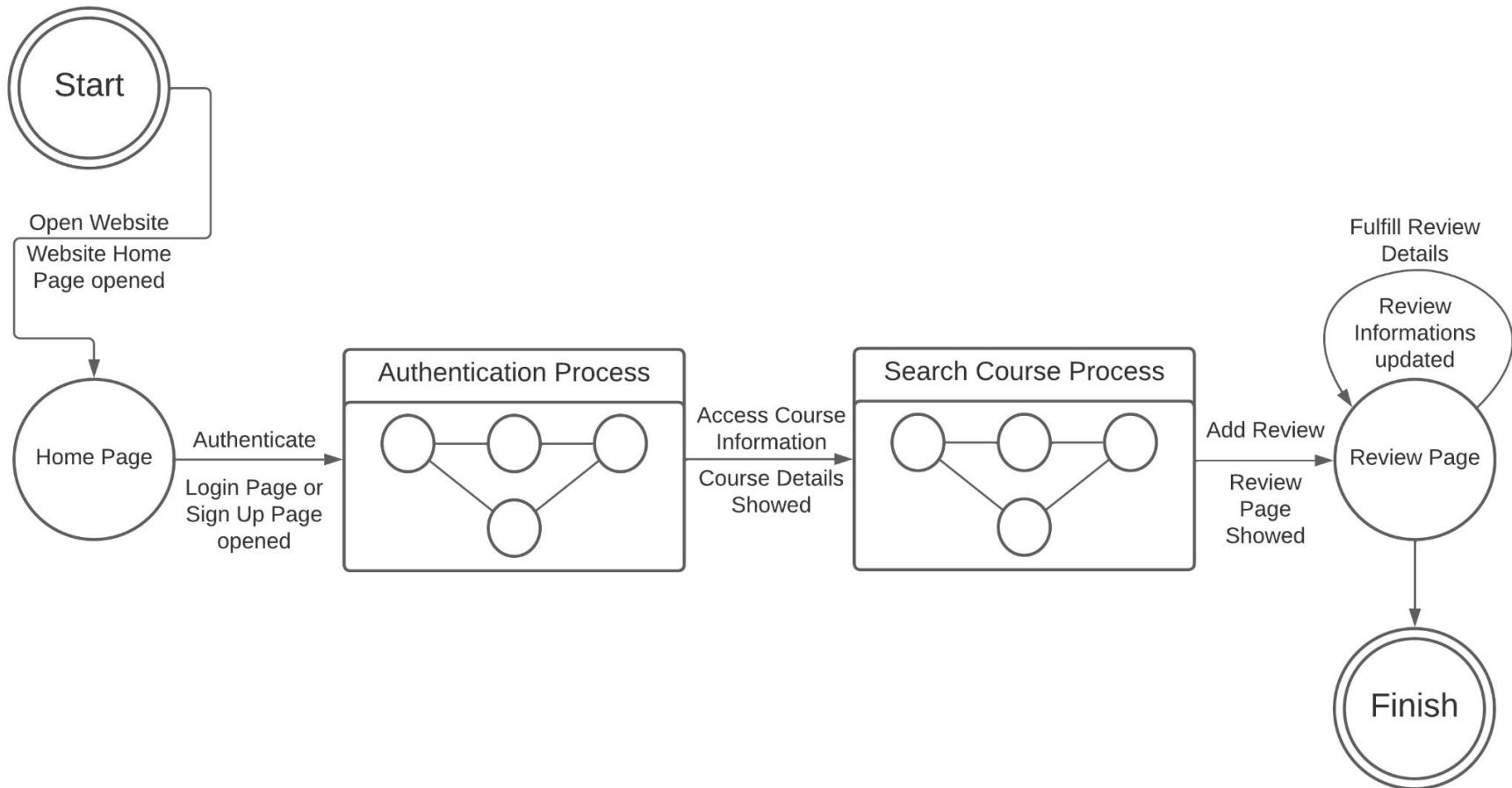


Write Review

Write a Review for a course:

- **land** on the website's home page
- **authenticate** in the website
- **access information** for a course
- go to the **review** section
- **insert** a review
 - insert rating and course attendance
 - write the review text

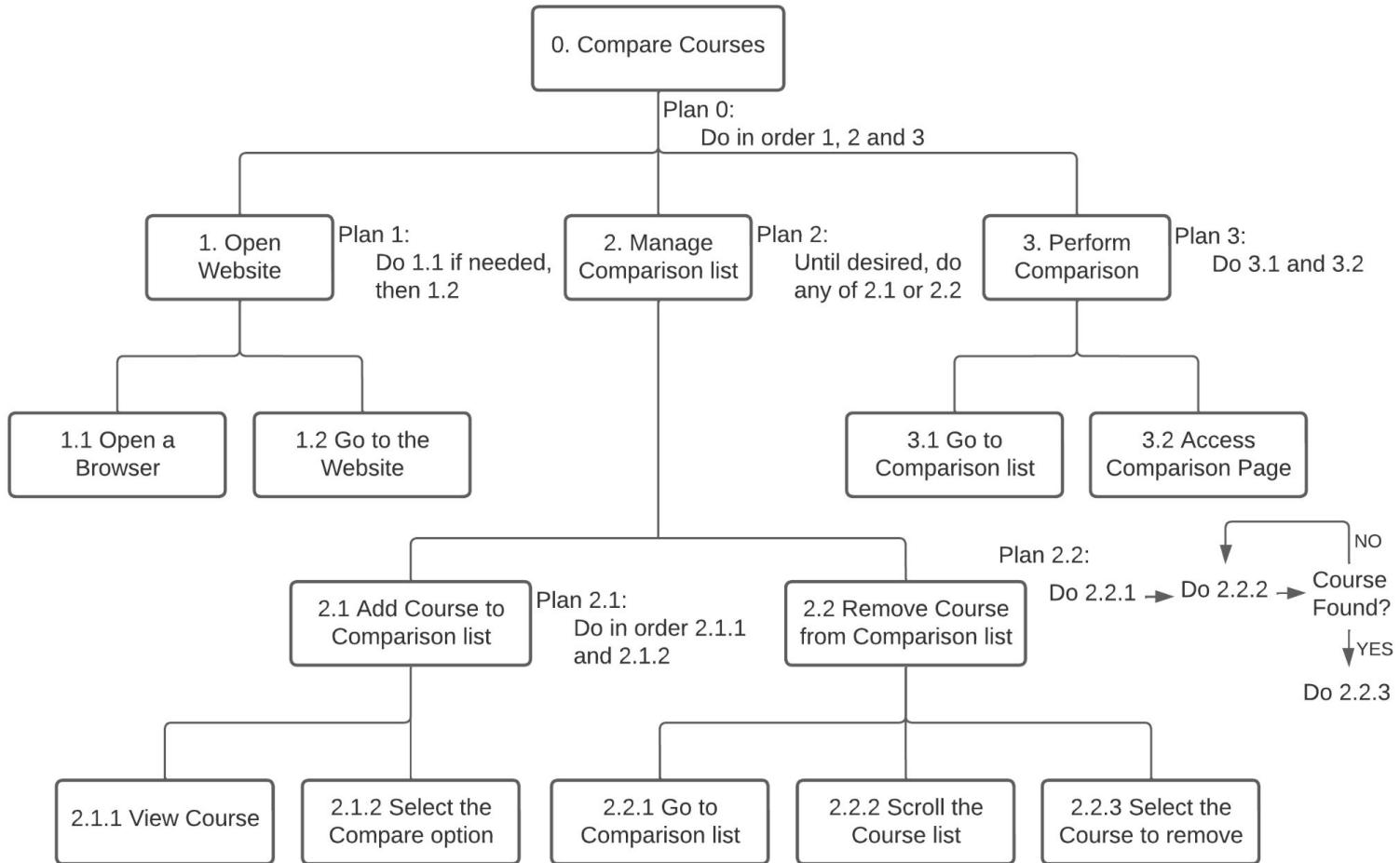


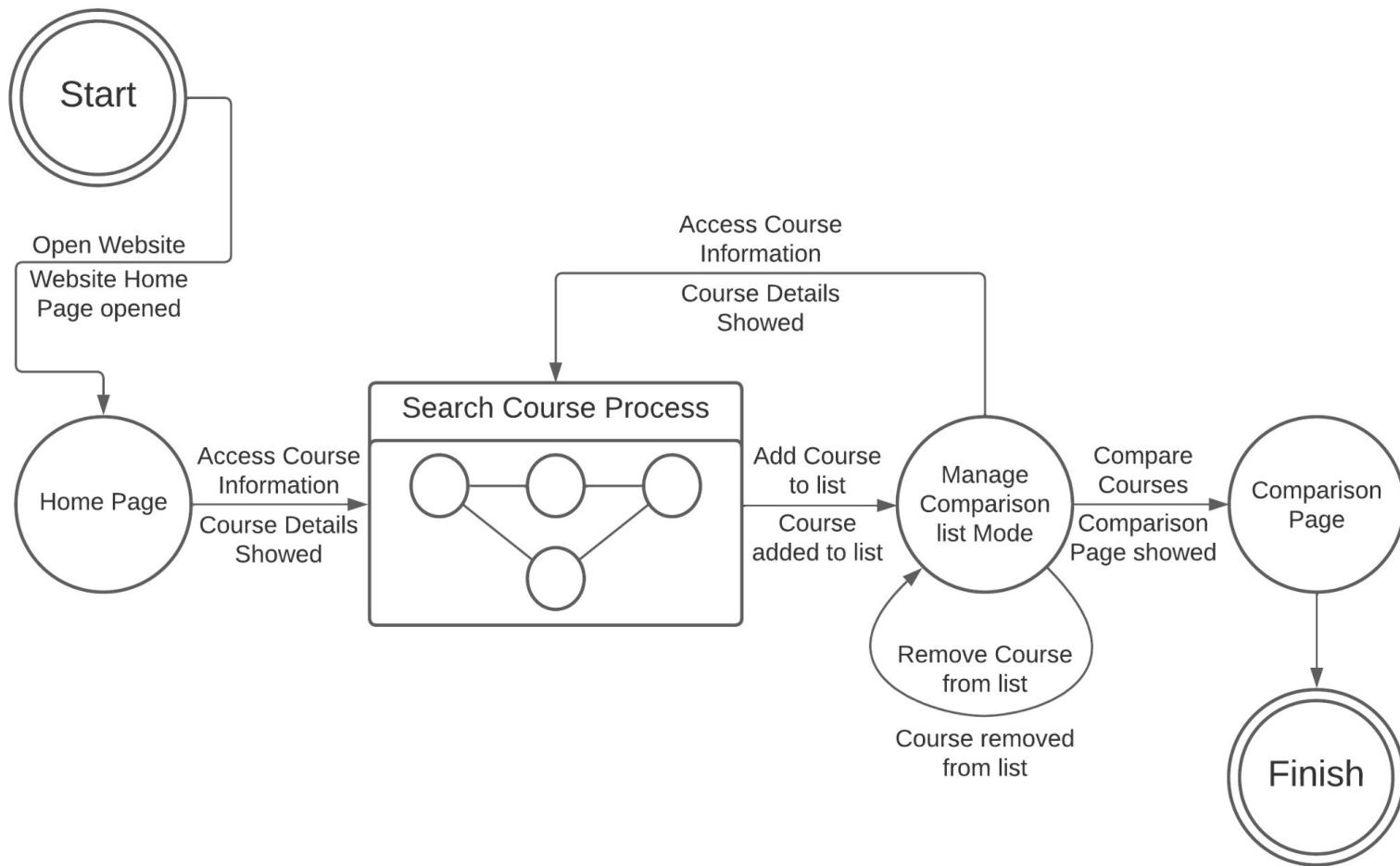


Compare Courses

Compare multiple courses:

- **land** on the website's home page
- **manage** the course **comparison list**
 - **add course** to comparison list
 - **remove course** from comparison list
- **perform** the comparison
 - go to comparison list
 - access comparison page





Prototype 1

Prototype 1

First system's version **mockups** designed based on:

- Original **final system's vision**
- **User needs** identified through questionnaires
- System **features suggestions** and **requests** from interviews

Mockups created using **Adobe Illustrator + Adobe InDesign**

→ **Interactive PDF** - Simulates actions / responses for tasks execution
(page navigation, user authentication, search, course comparison, ecc...)

Prototype 1 - Mockups Structure

P.1) Home Page (user not logged)

P.2) Login Page

P.3) Sign Up Page 1 (user registration)

P.4) Sign Up Page 2 (complete user profile)

P.5) Home Page (user logged in)

Contains an additional section with personalized course suggestions for the authenticated user

P.6) User Profile Page

P.7) Search Page

P.8) Course Page

Accessed when a course "card" is clicked

P.9-13) Course Comparison Page

Show 1 to 3 courses added to the comparison (with different horizontal scrolling visualization)

P.14-16) Search page (comparison list)

Showing the comparison list on top of the page

P.17-19) Course Page (comparison list)

Show the comparison list on top of the page

Suggested Courses

Course Name Which May Be Too Lo... :

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 Lo... :

Degree Course Name
 Tag Name Another Tag Name Yet Another Tag Name Yet Another
 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](#)

[Explore all suggested courses >](#)

Course Categories



Popular Courses

Course Name Which May Be Too Lo... :

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...

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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
- Medical 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](#)

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

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...

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[Read More](#)

Course Name

Degree Course Name

Tag Name Another Tag Name Yet Another Tag Name

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](#)

Category > Sub Category > Degree Course

Course Name

Degree Course Name

Tag Name Another Tag Name Yet Another Tag Name

6 CFU | Language: English

Reviews by other users

3.2 ★★★☆☆ (742)

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](#)

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 exercitation 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 relevancy 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 exercitation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat.

Duis autem vel eum iriure dolor in惑 in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilis at vero eros et accumsan iusto odio dignissim qui blandit praesent luptatum zzril delenit laborum. Ut wisi enim ad minim veniam, quis blandit praesent luptatum zzril delenit laborum.

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

Teachers



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".

Remove course from comparison

Remove course from comparison

Add course

Course Name Which May Be Too Lo... :

Degree Course Name

Tag Name Another Tag Name Yet Another Tag Name

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 Lo... :

Degree Course Name

Tag Name Another Tag Name Yet Another Tag Name

Rating: 3.2 ★★★☆☆ (742)

CFUs: 6 CFU

Language: English

Degree Course: Degree Course Name

Faculty: Faculty name

Department: Department Name

Lesson Period: March - May

Total Course Duration: 55 hours

Teachers: Teacher Name, Other Teacher, Other Teacher

Level: Intermediate

Related Degree Year: First Year

Related Degree Lesson Period: Second Semester

Objectives: The course of Course Name aims to lorem ipsum dolor consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim ven...

[Read More](#)

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...

[Read More](#)

Course Reviews

3.2 ★★★☆☆

742 total reviews

Sort By: Most Recent ▾

57% | 5 ★★★★★

20% | 4 ★★★★☆

17% | 3 ★★★☆☆

7% | 2 ★★☆☆☆

2% | 1 ★☆☆☆☆

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 exercitation ullamcorper suscipit lobortis nisl ut aliquip ex ea com...

Reviewer Username

✗ Reviewer did NOT attend this course

Courses exceed from the description, 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 exercitation ullamcorper suscipit 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 exercitation ullamcorper suscipit lobortis nisl ut aliquip ex ea com...

Reviewer Username

✓ Reviewer attended this course

Show more ▾

WEBSITE LOGO Explore > Search for a course Search > Log In Sign Up

Sign up to create your account

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](#)

About us Terms Privacy policy Sitemap **WEBSITE LOGO** English ▾ © 2022 Website Name, Inc.

WEBSITE LOGO Explore > Search for a course Search > Log In Sign Up

Log in to your WebsiteName account

Email
 Insert your email

Password
 Insert your password

Log in

or

 [Sign in with Google](#)

 [Sign in with GitHub](#)

 [Login with Facebook](#)

[Forgot password?](#)

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

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WEBSITE LOGO Explore > Search for a course Search > Log In Sign Up

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

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Expert Evaluation

Heuristic Evaluation

| 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) |

Usability Heuristics Used:

1. Visibility of system status
2. Match between system & the real world
3. User control and freedom
4. Consistency and standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility and efficiency of use
8. Aesthetic and minimalist design
9. Help users recognize, diagnose, and recover from errors
10. Help and documentation

Severity Scale:

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

Heuristic Evaluation - Final Notes

Conclusions:

- “**standard**” system interface → minimum number of violations
- **minor design and usability flaws** introduced

Cognitive Walkthrough

Task: compare up to three courses searched on the website

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 shown

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”

Cognitive Walkthrough - Notes

The evaluation resulted in a positive outcome for the majority of actions and responses.

- **Action number 4** was identified by the expert as violating one of the 4 questions: will users see that the action is available? —→ the user may not directly locate the link due to the overwhelming amount of information present in the page
- For **action number 1** the expert noted 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

Prototype 2

Home Page

Expert Suggestions:

- we added a “**system introduction**” section on top of the page
- we changed the “**Explore**” text at the top with “**Explore Categories**”

Other Changes:

- we added a **button** to **refresh** the suggested courses in the page

The screenshot shows the Course4U website with several changes highlighted by orange boxes:

- Header Area:** The "Explore categories" button in the top navigation bar is highlighted.
- Welcome Section:** The "What can you do here?" section is highlighted, listing features like detailed course information, search filters, account login, and course comparison.
- Suggested Courses Section:** A green box highlights the "Refresh suggested courses" button next to the heading "Your Suggested Courses". Below it, three course cards are shown: "Fundamentals of Automatics", "Earth Observation", and "Vision and Perception".
- Course Categories Section:** A green box highlights the "Course Categories" heading, which includes icons for Architecture, Arts and Humanities, Civil and Industrial Engineering, Economics, Information Engineering, Computer Science, and Statistics, and Law.
- Popular Courses Section:** A green box highlights the "Popular Courses" heading, which includes cards for Life Science and Information Histology and European Union Law.

Advanced Search Page

Expert Suggestions:

- we added an option to switch between a “**compact**” and “**detailed**” visualization for search results
- we show search **filters as collapsed** by default in the search page

Other Changes:

- we added a **search bar** for the “**Tags**” filter to allow users to easily search for tags they want

The screenshot shows the Course4U search results for "human computer interaction". The interface includes a search bar at the top, followed by a "Search filters" sidebar on the left containing categories like Architecture, Arts and Humanities, Civil and Industrial Engineering, Economics, etc., and a "Tags" section with a search bar. Below these are dropdown menus for CFUs, Rating, Lessons Period, Language, and Total hours. The main content area displays four search results, each with a title, description, and a "View: Detailed" button highlighted with a red box. The results are as follows:

- Human Computer Interaction**
Master: Engineering In Computer Science (2022/2023)
Ingegneria Dell'Informazione, Informatica e Statistica
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 Basic Interaction Technologies Adopted texts A. Dix, et al. Human-Computer Interaction. Pearson/Prentice Hall, 2009 Lesson slides
- Human-Computer Interaction**
Bachelor: Informatics (2022/2023)
Ingegneria Dell'Informazione, Informatica e Statistica
4.9 ★★★★☆ (73) 6 CFU • First semester • 36 hours • Italian
Description: Programme Topics of this course: HCI topics - need finding - storyboarding - prototyping - interface evaluation - user-centered design - interaction models - interaction principles - design criteria - design - design - use context - device capabilities - main mobile interaction principles - design criteria on Android - design criteria on iOS Adapted texts Course textbook - Kurniawan, S. (2004). Interaction design: Beyond human-computer interaction by Preece, Sharp and Rogers (2001), ISBN 0415492787 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
3.9 ★★★★☆ (60) 6 CFU • Second semester • 60 hours • English
Description: Programme This course aims to introduce the students to the principles of 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 displays/Wearable devices HCI methodologies and tools - context aware implicit interaction + activi...
- Human-Computer Interaction**
Bachelor: Informatics (2021/2022)
Ingegneria Dell'Informazione, Informatica e Statistica
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 modelling, 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
4 ★★★★☆ (66) 6 CFU • Second semester • 60 hours • English
Description: Programme This course is about principles of different interaction 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 displays/Wearable devices HCI methodologies and tools - context aware implicit interaction + activi...

At the bottom, there are links for About Us, Contact Us, Privacy policy, Help and support, Sitemap, Course4U, English, and a copyright notice.

Course Page

Expert Suggestions:

- 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
- we replaced the link to add a course to the comparison list with a button

Other Changes:

- we reworked some aspects of the review section

The screenshot shows a detailed view of a course page for "Human Computer Interaction". At the top, there are tabs for "Explore categories", "Search", "Sign Up", and "Login". Below the header, the course title "Human Computer Interaction" is displayed along with its category "Engineering in Computer Science > Human Computer Interaction". It indicates it's a Master's course in "Engineering in Computer Science" for the 2022/2023 academic year, first year, with a second semester. The course has a rating of 4.9 stars from 13 reviews. Key course details include:

- Prerequisites:** Preliminaries on Human-computer interaction, Usability Principles, Introduction to User-Centred Design, Cognitive Models, Task Models, Dialogue Design, System Models, Evaluation Techniques, Interaction Design, Basic Interaction Technologies.
- Adopted texts:** A. Dix, et al., Human-Computer Interaction, Pearson/Prentice Hall, 2003.
- Lesson slides:** Available for download.
- Exam reservation date start:** 16/02/2023
- Exam reservation date end:** 06/09/2023
- Exam date:** 16/02/2023
- Exam date end:** 16/02/2023
- Code:** 1010134
- Faculty:** ING-INF/05 - INGEGNERIA INFORMATICA E AUTOMATICA
- Department:** ING-INF/05 - INFORMATICA AUTOMATICA
- Coordinator:** ANTONIO SQUARITÀ
- Degree Course:** Engineering in Computer Sciences
- Degree Type:** Masters
- Curriculum:** ING-INF/05 - INFORMATICA (versione valida anche ai fini del conseguimento dei dogmi di laurea magistrale)
- Miscellanea:** Attività formative caratteristiche, Attività didattiche, Ingegneria informatica

Course Description: (Collapsible section)
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 user-centered design (UCD). The various components of UCD will be discussed, along with theoretical, empirical, and practical methods for 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.

Course Objectives: (Collapsible section)
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 user-centered design (UCD). The various components of UCD will be discussed, along with theoretical, empirical, and practical methods for 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:
Understanding the concepts of human-computer interaction (or human-system interaction) and usability. Able to conduct a complete project of an interactive system following the UCD methodology.

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

Critical and analytical skills:
Being able to evaluate the quality 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 class, learning activities 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.

Course Reviews:
4.9 ★★★★☆ (31 total reviews)
Sort reviews by: Date (descending) ▾
Chloe Turner
★★★★★ 5/5
July 05, 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
Great course! Learned a lot.
July 15, 2022
Reviewer attended this course
Dwayne Johnson
★★★★★ 5/5
Didn't attend, so can't comment, but course programme is very interesting and well-structured.
April 14, 2022
Reviewer did NOT attend this course

Course Comparison Page

Other Changes:

- we added the possibility to **collapse** and **expand** the “comparison list” menu
- we **simplified the information** shown for each of the compared courses and **added more instructions** to help with the management of said courses

Course4U Explore categories > Search Sign Up Login

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

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Login Page

Other Changes:

- we added the possibility to **show the inserted password** while typing
- we added additional **alerts** and **pop-ups** for possible errors or required characteristics of the various input fields
- we added an option to **sign up** using both **email** and **password** as well as **username** and **password**

The screenshot shows the login page for Course4U. At the top, there is a navigation bar with the logo 'Course4U', a search bar, and buttons for 'Sign Up' and 'Login'. The main area is titled 'Login to your Course4U account'. It features a form with two input fields: 'Username / Email' containing 'valerio' and 'Password' containing 'Insert your password'. A red error message 'Pleas insert your password' is displayed below the password field. To the right of the password field is a 'Show password' eye icon. Below the form are three social login options: 'Login with Google', 'Login with GitHub', and 'Login with Facebook'. At the bottom of the form area, there are links for 'Forgot your password?' and 'Don't have an account? Register'. The footer contains links for 'About Us', 'Contact Us', 'Help and support', 'Terms', 'Privacy policy', and 'Sitemap'. On the right side of the footer, there is a language selector set to 'English' and a copyright notice: '© 2022 Course4U'.

Signup & Complete Profile Pages

Course4U Explore categories >

Search for anything...

Search >

Sign Up

Login

Sign up for a new Course4U account

Username

valerio

NOTE: Your username will be visible to other users

Email

Insert your email

Please insert a valid email

Password

password



Confirm Password



Password does not match

Sign Up

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

Already have an account? [Login](#)

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English ▾

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Course4U Explore categories >

Search for anything...

Search >

Sign Up

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](#)

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English ▾

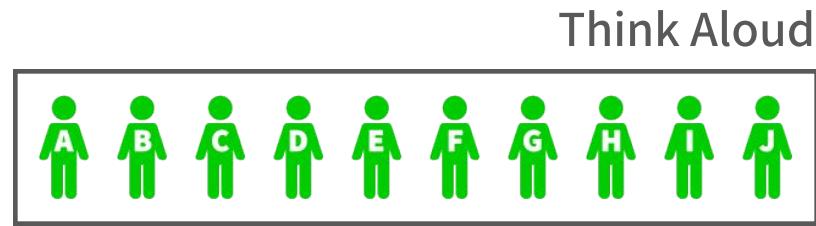
© 2022 Course4U

User Evaluation

User Evaluation - Adopted Techniques

1) Think Aloud

(10 testers)



2) Cooperative Evaluation

(6 testers)

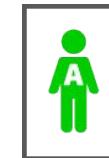
Cooperative Evaluation



3) Post-Task Walkthrough

(1 tester)

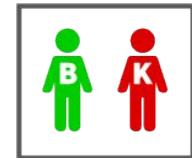
P.T.W.



4) Interviews

(2 testers)

Interviews



5) Controlled Experiment

(14 testers)

Controlled Experiment



Think Aloud

10 testers involved in “think aloud” sessions

Took note of testers’ **difficulties & frustrations**

Some testers allowed us to **record** their interaction

Task 1: Authenticate User

→ **Register** to the website and **complete profile** selecting up to **5 favorite tags**

Task 2: Compare Courses

→ Access **course comparison page** for two different courses

Main Takeaways

- Testers generally found it easy to navigate the website and execute the given tasks
- Some testers took some time to identify the purpose of the “complete profile” page
- Some testers took some time to realize they had to expand each tag categories sections to select their favorite tags
- Some testers abandoned the favorite tags selection half way through to skip the “complete profile” phase completely

Cooperative Evaluation

6 testers involved in our “cooperative evaluation”

We **answered users questions** and **requests** during the various sessions

We **identified users' doubts** from both observing their interactions and listening to their questions

Task: Write Review

→ **Write a review** for a course of your choice

Main Takeaways

- Testers generally found it easy to navigate the website and execute the given task
- Some testers took some time to locate the “Add your review” button in the course information page
- For courses’ reviews, some testers found the “attended” and “not attended” text hard to immediately notice

Post-Task Walkthrough

One of our previous testers involved

He gave us permission to **record its interaction** with our system (including its **screen** and its **voice**) using the “**OBS**” program

We played back part of its recordings and **asked questions** about his **actions & thought process**

Task: Authenticate User

→ **Register** to the website and **complete your profile** (no restrictions or guidelines for the favorite tags to select)

Main Takeaways

- During the **“complete profile” phase**, our tester took some time to select its favorite tags and changed his mind about **one of the tags** he chose (deselecting it)
- Tester told us that he **didn’t encounter problems** while executing its task
- Tester suggested to **replace the “Skip this phase” text** at the start of the “complete profile” page **with a button**

Interviews

Two of our previous testers involved

Interviewees were asked to **execute the 4 major tasks of our system** (“View Course”, “Authenticate User”, “Write Review”, “Compare Courses”)

We started interviews from the following questions:

- 1) Did you **feel comfortable** while using our system?
- 2) For each tasks, did you find any **pain point**?
- 3) How **easy** was it for you to **execute each task**?
- 4) What do you think about our **system's design**?
- 5) Do you have **suggestions**?

Main Takeaways

- Both the interviewees' responses were **generally positive**
- Interviewee #1 took some time to **locate the “Add your review” button** in the course page (suggesting to make the corresponding form **visible by default**)
- Interviewee #1 also suggested to **add and rearrange some filters** in the search page
- Interviewee #2 suggested to **add a “Back to top” button** in all pages of the website

Controlled Experiment

Problem Analyzed

We decided to perform a controlled experiment to help us choose between two alternatives for the user interface of the “add user review” feature.

- The first version of the interface, “**version A**”, contains an “Add your review” button with an icon and text, which expands either a form to submit the review or an alert for when the user is not logged in
- The second version of the system, “**version B**” has no button, but instead shows the form to insert the review in its entirety by default, along with the same alert on top of it when the user is not logged in

User Interface - Version A

Course Reviews

3.8 ★★★★☆
45 total reviews

Sort reviews by: Date (descending) ▾

Add your review

Noah Adams
★★★★☆ 4/5

✓ Reviewer attended this course
June 27, 2022

Liam Wilson
★★★★☆ 4/5

✗ Reviewer did NOT attend this course
June 27, 2022

Course Reviews

3.8 ★★★★☆
45 total reviews

Sort reviews by: Date (descending) ▾

Add your review

⚠ You must be logged in to add a review

[Sign Up](#) [Login](#)

Noah Adams
★★★★☆ 4/5

✓ Reviewer attended this course
June 27, 2022

Course Reviews

3.8 ★★★★☆
45 total reviews

Sort reviews by: Date (descending) ▾

Add your review

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

✓ Reviewer attended this course
June 27, 2022

Liam Wilson
✗ Reviewer did NOT attend this course

User Interface - Version B

Course Reviews

3.8 ★★★★☆

46 total reviews

Sort reviews by: Date (descending) ▾

You must be logged in to add a review

[Sign Up](#) [Login](#)

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...

[Submit your review](#)

valerio
★★★★★ 5/5
Good course

X Reviewer did NOT attend this course

September 05, 2023

Course Reviews

3.8 ★★★★☆

46 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...

[Submit your review](#)

valerio
★★★★★ 5/5
Good course
[Delete your review](#)

X Reviewer did NOT attend this course

September 05, 2023

Noah Adams
★★★★★ 4/5

✓ Reviewer attended this course

June 27, 2022

Participants and Hypothesis

Participants

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.

Hypothesis

For the experiment our hypothesis was that version A would be more intuitive for the user than version B 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.

Independent & Dependent Variables

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
- **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

Dependent Variables

We decided to measure the time employed by the user to write the review starting from the home page, to get an estimate of how easy and effective it is for users to find out how to insert a review for a specific course using our system

Experimental Method and Details

Experimental Method

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

A possible problematic is the “**transfer of learning**” which could alter the results of our experiment, so we tried to mitigate it by dividing our sample group in two subgroups of 7 people each:

- the first group completed the tasks first on the version A of the prototype and later on version B
- the other subgroup performed the same tasks in the reverse order, first on version B and then on A

Experiment Details

The additional assumptions for the experiment are the following:

- each user needs to write a review for the course “Cybersecurity” of the “Engineering in Computer Science” degree course with the text “Good course”
- each user can login with the username “user” and the password “password”

Analysis of the Results (ANOVA)

| 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 |

| SUMMARY | | | | | | |
|---------------------|----------|------|-------------|-------------|-----------|----------|
| Groups | Count | Sum | Average | Variance | | |
| Column 1 | 14 | 1698 | 121,2857143 | 294,2197802 | | |
| Column 2 | 14 | 1909 | 136,3571429 | 341,1703297 | | |
| ANOVA | | | | | | |
| Source of Variation | SS | df | MS | F | P-value | F crit |
| Between Groups | 1590,035 | 1 | 1590,035 | 5,00491 | 0,0340656 | 4,225201 |
| Within Groups | 8260,071 | 26 | 317,6950 | | | |
| Total | 9850,107 | 27 | | | | |

| 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

| Groups | Count | Sum | Average | Variance |
|----------|-------|------|-------------|-------------|
| Column 1 | 14 | 1698 | 121,2857143 | 294,2197802 |
| Column 2 | 14 | 1909 | 136,3571429 | 341,1703297 |

ANOVA

| Source of Variation | SS | df | MS | F | P-value | F crit |
|---------------------|-------------|----|-------------|-------------|-------------|-------------|
| Between Groups | 1590,035714 | 1 | 1590,035714 | 5,004911753 | 0,034065691 | 4,225201273 |
| Within Groups | 8260,071429 | 26 | 317,6950549 | | | |
| Total | 9850,107143 | 27 | | | | |

From the **report** we obtained the following results:

- $F > F_{crit}$
- P-value < 0.05

We can therefore conclude that:

- the **null hypothesis** can be rejected
- the **times** for writing the reviews are **not equal**
- the obtained **result has statistical significance**

This result is in line with what we expected:

Version A

Follows platform and industry conventions —→ **button** to prompt the insertion of a review

Provides a **clear feedback** after the press of the button

Version B

Already available form with **no button**

The user has to notice the warning message **without any interaction**

The user is **not expecting a feedback**

Final System Implementation

Final Changes

The **last changes** we implemented before releasing the final prototype are the following:

- we **reduced** the number of selectable **tags** to avoid discouraging users from completing their profile
- we **collapsed by default** each of the sections containing **selectable tags** and also **added a checkbox** to select or deselect all the tags of the section
- **for each of the reviews** for a certain course, we **made the text** specifying whether a reviewer attended the course or not **more noticeable**

- 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
- we also changed the “Skip this course” link on top of the page with a more noticeable button
- 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
- we made the button to insert a user review more noticeable by adding a looping animation to it

Conclusions and Future Developments

Conclusions and Future Developments

Scalable and Adaptable System

Allows for **expansion to other universities** and to **other educational content types** (certificates, unaccredited courses, ecc...)

Community Involvement

In both the **system's development** as well as **information management** (e.g. suggesting and editing courses information and tags)

Educators Involvement

Involving **courses' administrators** and **teachers** would allow for more **precise and complete information** provided to users

Becoming the “Go-to” Platform

Our aim is for the system to become the definitive platforms for **courses discovery** across various fields, simplifying the **course selection process**.

We continue to refine and expand our system to make **education more accessible and informed for all**, starting from our fellow Sapienza students

Course4U

Your personal **course discovery hub**

Project developed for the
Human Computer Interaction course
at **Sapienza University of Rome**

Valerio Di Stefano
Giuseppe Prisco

