



Exploitation plan for
problem-based learning laboratory
Hanoi University

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1. Name of the lab

The lab at Hanoi University is named “ALIEN problem-based learning lab”. This name briefly and accurately describes the purpose of the lab. Besides, the prefix ALIEN indicates that the lab is funded by the project ALIEN.

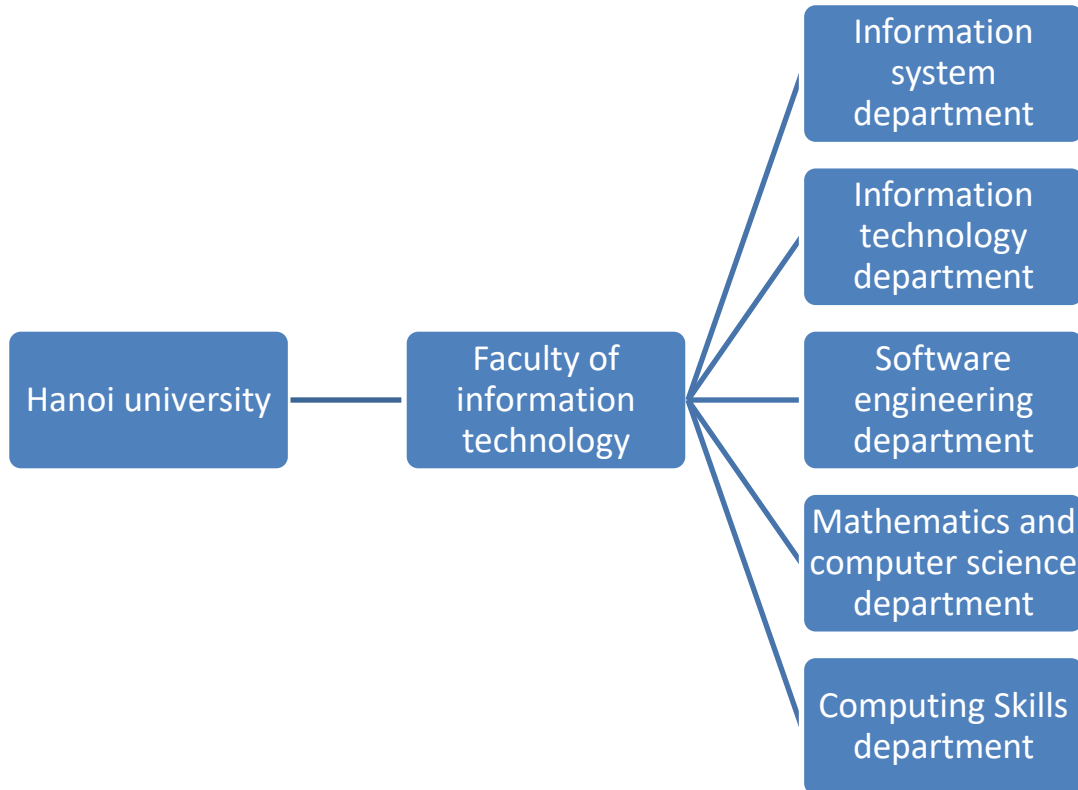
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2. Faculty in which the lab belongs

The ALIEN problem-based learning lab belongs to the Faculty of Information Technology, Hanoi University. The following is the organogram of Hanoi University which shows where in the university the lab fits.



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3. Purpose of the lab

The ALIEN problem-based learning lab at Hanoi University is used to promote new pedagogical methodologies such as game-based, and problem-based learning. It is designed specifically for active learning with moveable tables that can be reordered to create flexible space for different games or activities. Moreover, all needed equipment for applying active learning in 3 main courses is installed with reasonable numbers for students to use. The lab supports 20 – 25 students at a given session, who can work in groups utilizing the available equipment.

3.1 Guidelines for use

The following guidelines are provided for lab users:

- The lab includes equipment designed specifically for teaching multimedia design. However, it is also suitable for a wide variety of subjects due to the flexibility of room design and high-quality facilities.
- For teachers who are not experienced in using the lab, the project technician will guide in detail on how to use the equipment and assist when needed. Teachers may call a hotline number provided in advance.
- The lab supports approximately 25 students at a given time. It is suitable for classes with a small number of students, and is not designed for classes with large numbers of students.
- Teachers and students can rearrange the configuration of the tables and chairs but are not allowed to disassemble the equipment.
- Besides courses that are assigned to use the lab officially with fixed timetable, any teachers or tutors who want to use the lab need to inform the support team in the department at least 1 week in advance. The team will arrange a suitable time for each and inform within a day.

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3.2 A scenario for the use of the lab

Following is an example of the use of the lab. It is provided as inspiration for educators and students on the type of learning activities that may be supported through the lab.

Course title: Multimedia design.

Engineering curriculum where it belongs: Multimedia.

Course objectives: To teach the basic elements of multimedia. Specifically:

- To teach how to combine different elements in one multimedia product
- To teach how to leverage text, image, sound, animation and video clip to convey meaningful messages.
- To guide how to design and manage a multimedia project

Number of students to be engaged: 70.

Problem-based learning activities that will be integrated in the course: A series of activities that may be included in the course for helping students understand elements of multimedia, stages, and skills in making multimedia, multimedia tools, and more. A range of different activities and teaching methodologies may be deployed to address the entire range of learning objectives of the course as these are described above. The following are some examples:

- Analyze different multimedia products to see how they are used in different fields, such as business, education, at home, at market places, and more.
- Revise the lesson using fun and interactive games in Kahoot® (<https://kahoot.com/b/>) or Quizlet® (<https://quizlet.com/latest>). After having students play the game, teachers may ask students to identify the benefit of multimedia in education.
- Play a “fonts have feelings” game printing messages using bad font choices, asking students how the fonts and words make them feel. Challenge students to find a better font for the selected message.

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- Have students design their own font using Fontstruct® (<https://fontstruct.com/>).
- Select 5 different web pages, each from a different web site. Select pages that contain lots of colors and images, both photographs and graphics. View the 5 different pages on both a Macintosh and a PC screen, preferably side by side, as well as on more than one computer on the same platform, for example use one Mac and two Windows computers. Note the differences in how each page appears across platforms and screens. For each page, write a paragraph describing how they differ in terms of color tone, saturation, and any other noticeable characteristics.
- Play a Headsup® game (projector required) to enhance students' memory on the 12 principles of animation.
- Show samples of animation, some of which follow the 12 basic principles and some do not. Ask students to identify the differences among them. Ask students to build their own animation based on the 12 principles. Students may present the final result in class.
- Locate 3 multimedia projects and review the credits. Ask students to identify: How many members were on the team? What were their titles? How many team members performed more than one role? What tasks were "outsourced" to external companies? Ask students to create a table that compares the titles for similar roles among the 3 projects. For each role, discuss how the team related to the product.

Equipment, software, and educational material to be used: Following is a list of course supporting equipment:

- **Equipment:** Computers, multimedia workstations with high-end graphics, 2 laptops, scanner A4, short throw projector, i-board, laser printer A3, Swivl® robot and solution, and project accessories.
- **Software:** MS office®, Audacity®, Adobe Photoshop®, Dreamweaver®, Pencil2D®, Blender®.

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- **Educational material:**

Multimedia: making it work by Tay Vanghau, 8th edition Li, Z. and S. Drew, M. (2004).

Fundamentals of Multimedia. 1st ed. Prentice-Hall.

Fit portal: <http://fit.hanu.vn/>.

- **Other materials:** Google® email, Google® drive, Fontstruct® (online).

3.3 Activities and courses

3.3.1 Courses in which the lab was used in the past

Multimedia Design

Students learn the basic components of multimedia communication and how to combine them using existing tools and techniques. The course also helps students understand how to use pictures, sounds, and video clips to convey the message in the most meaningful way. At the same time, students build knowledge on how to design and manage a multimedia communication project.

This is an elective course that targets undergraduate students in the Department of Information System, Faculty of Information Technology, Hanoi University. 51 students enrolled in the course in semester 1 of the 2019-2020 academic year. All students were in the 3rd year of their studies.

Special Subject 01

Students work on research topics under the guidance of the. Topics are related to web design, human-computer interaction, multimedia design, and more.

This is an obligatory course that targets 2nd year undergraduate students from the Department of Information System, Faculty of Information Technology, Hanoi university. Approximately 17 students were enrolled in semester 1 of academic year 2019-2020.

Special Subject 02

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This course is a continuation of Special Subject 01. The course introduces special topics that can be the extended or advanced part of topics addressed in Special Subject 01. Students work in the same groups as in Special Subject 01 and develop an application based on the results of their research in Special Subject 01. Alternatively, students may conduct additional literature review and research on a topic of interest.

This is a 3rd year mandatory course for undergraduate students in the Department of Information System, Faculty of Information Technology, Hanoi University. The course enrolled 20 students in semester 1 of the 2019-2020 academic year.

Information Systems Design and Implementation

The course builds knowledge on how to design and implement an information system step by step. The course addresses the following themes: understanding agile design methodologies, understanding how to specify and analyze the user requirements, being able to deploy design tools, analyzing and designing accurately, implementing, and managing a project.

This is an obligatory course that targets 4th year undergraduate students in the Department of Information System, Faculty of Information Technology, Hanoi university. Approximately 42 students enrolled in the course in semester 2 of the 2019-2020 academic year.

Data Structures and Algorithms

The course aims to equip learners with basic knowledge on algorithms and data structures as well as their practical applications. It builds student capacity to understand and apply algorithms and data structures properly, to evaluate and select appropriate algorithms or data structures for a specific project, and to design and implement algorithms or data structures in the Java[®] programming language for learning, researching, and working.

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This is an obligatory course that targets 3rd year undergraduate students in the Department of Information System, Faculty of Information Technology, Hanoi university. Approximately 32 students enrolled in the course in semester 2 of the 2019-2020 academic year.

3.3.2 Courses in which the lab is currently used

Database Design

The course builds student capacity to design a database system using appropriate relational database design tools. Upon completion of the course students are able to fully design a relational database system for a substantial problem. They are further able to develop a fully functional relational databases system based on an existing design. Finally, students are able to test a database system based on the system requirements.

This is a 3rd year obligatory course. It was taught in semester 1 of academic year. The course engaged 105 students.

System Analysis and Design

The course builds student knowledge on gathering data for analyzing and specifying system requirements, designing system components and environments, building general and detailed models that assist programmers in implementing a system, designing a database for managing data, designing a user interface for data input and output, and designing controls for protecting systems and data.

This is a 3rd year obligatory course. It was taught in semester 1 of academic year 2020-2021. The course engaged 121 students.

3.3.3 Courses in which the lab will be used in the future

Information Systems Design and Implementation

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The course is described above. It is conducted in semester 2 of each academic year. Active learning is being applied in this course starting in academic year 2019-2020. Activities will continue in the 2020-2021 academic year (January – May, 2021). The ALIEN problem-based learning lab will be deployed in the course.

Special Subject 02

The course is described above. The course engages 20 – 40 students in each academic year. Active learning has been applied in the course starting in academic year 2019-2020. Activities will continue in the 2020-2021 academic year (January – May, 2021). The ALIEN problem-based learning lab will be deployed in the course.

Multimedia Design

The course is described above. Active learning has been applied in the course starting in academic year 2019-2020. Activities will continue in the 2020-2021 academic year (January – May, 2021). The ALIEN problem-based learning lab will be deployed in the course.

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4. Resources

4.1 Equipment

- Computers and laptops

Students will work in groups; each group use 1 computer and/or 1 laptop to design their multimedia product in class. It's is important to test the final product on differents computers so both desktop computers and laptops must be used.

- Multimedia workstations with hi-end graphics

The multimedia workstations offer high-quality design especially suitable for making animation and video in the course.

- Scanner a4

Scan images and documents when students learn image editing. Besides this one can be used to scan required documents for the course such as leaflet or book covers.

- Printer a4

Students can use printer to print documents or images when they learn image editing and typeface designing. Moreover, this one can be used when students need to see differences between soft version and printed version of an image or documents.

- Short throw projector

The projector is used by teachers and students to deliver presentation or product demonstration, for playing educational games like mentioned above.

- I-Board

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Displaying students' multimedia product or idea. Moreover, it can interact with the short throw projector to make an effective presentation.

- Laser printer A3

Using printer to print documents or images when students learn image editing and typeface designing. There are 2 printers for different requirements of the course

- Swivl robot and solution

This equipment is used to record all lecture delivered by teachers. All recorded files will be used as material for making online class (an example of multimedia in education)

- Accessories for projectors

For the usage of projectors

- Wifi

For laptops and cellphone to access the internet

4.2 Staffing

The support team is comprised of a technician who has a clear understanding of the room's equipment and usage of the classroom. The technician is in charge of maintaining equipment as well as supporting users of the lab. When using the lab, teachers are provided with a hotline that they can call the technician for help. We also need one teacher who has experience in applying active learning and using this lab in courses. The tutor can flexibly use the equipment and software available in the lab to create activities for classes. This person is a key staff of the ALIEN project at Hanu and will take on the role of training, sharing room usage experiences with other teachers. In addition, an assistant of the faculty will manage the scheduling of the lab's classes as well as receive registration from teachers.

The individuals are already employed by our faculty.

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4.3 Financial support

After the project is completed, the lab will continue to be used under the management of the Faculty of Information Technology, Hanoi University. Fees to maintain the lab include the staff costs for 2 technicians to maintain and support the teachers and student to use the lab. Expenses for machinery maintenance, equipment repair in case of damage and equipment supplementation according to the training needs of the faculty.

These expenses will be deducted from the tuition fee paid by students to Hanoi University. In addition, a part of the budget will be deducted from the sponsorship packages of companies that cooperate with the Faculty of Information Technology such as GMO RUN System Company, FPT Corporation, SEPTENI Company, or IFI solution company or company.

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