

LBAW Presentation, 24/25 Edition

Databases and Web Applications Laboratory (LBAW)
Bachelor in Informatics Engineering and Computation (L.EIC)

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Lecture #1 Plan

- Course presentation
 - Topics, materials, evaluation, project, groups, overall dynamics, caveats.
- Requirements specification
 - Actors, user stories, supplementary requirements.

LBAW Team, 24/25 Edition



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LBAW @ L.EIC

- ~350 students enrolled (now, will likely increase)
- 15 lab classes (~24/students)
- 9 teachers.
- Lecture classes organized in shifts (Monday morning at 8h30 and at 10h30).
- 8h30 in Portuguese; 10h30 in English (if needed and possible).
- 2h lab classes throughout the week.

LBAW Objectives

- Learn how to...
 - design
 - and develop
 - web-based
 - information systems
 - backed by a relational database management system.
- Build upon the learning outcomes of two previous courses in
 - **databases** (BDAD) and
 - **web languages and technologies** (LTW)

Databases

- Prior knowledge expected:
 - data modeling, relational model, SQL (construction, querying, management)
- What's new?
 - Client-server model
 - Scale, integration
 - Indices
 - Triggers, Transactions
 - PostgreSQL
 - + Information Retrieval

Web technologies

- Prior knowledge expected:
 - URL, HTTP, HTML, CSS, JavaScript, PHP
- What's new?
 - Server-side frameworks
 - Client-side libraries
 - Scale, integration
 - Performance
 - Laravel

Additional learning outcomes

- Structured development of a medium sized project.
- Writing technical documentation to support development.
- Working in teams (4 students per group).
- Docker to support container-based development.

Evaluation

- Final grade =
 - 80% project grade +
 - 20% individual grade (exam)
- Project grade =
 - 10% requirements specification +
 - 25% database specification +
 - 25% web architecture specification +
 - 40% product and presentation
- Individual grades within each group may vary in more or less 3 grade points, depending on the opinion of the professors and on the self- and hetero-evaluation carried out internally.
- The final individual classification cannot exceed in 5 more grade points the classification obtained in the test.
- Minimum grade of 50% in each project component.
- Minimum grade of 40% in the exam.

Obtaining Frequency

- To obtain **course frequency** (frequência) you need to:
 - (1) Not exceed the maximum number of absences in practical classes (25%);
 - (2) Register in a work group within the defined period;
 - (3) Participate in each of the four components of the project;
 - (4) Participate in the final presentation and defense of the project.
- Participation in the project development (point 3) is assessed through the evidence produced by the student (code and documentation), the evaluation by instructors during practical classes, and the group's self-assessment and peer evaluation.

Working in Groups

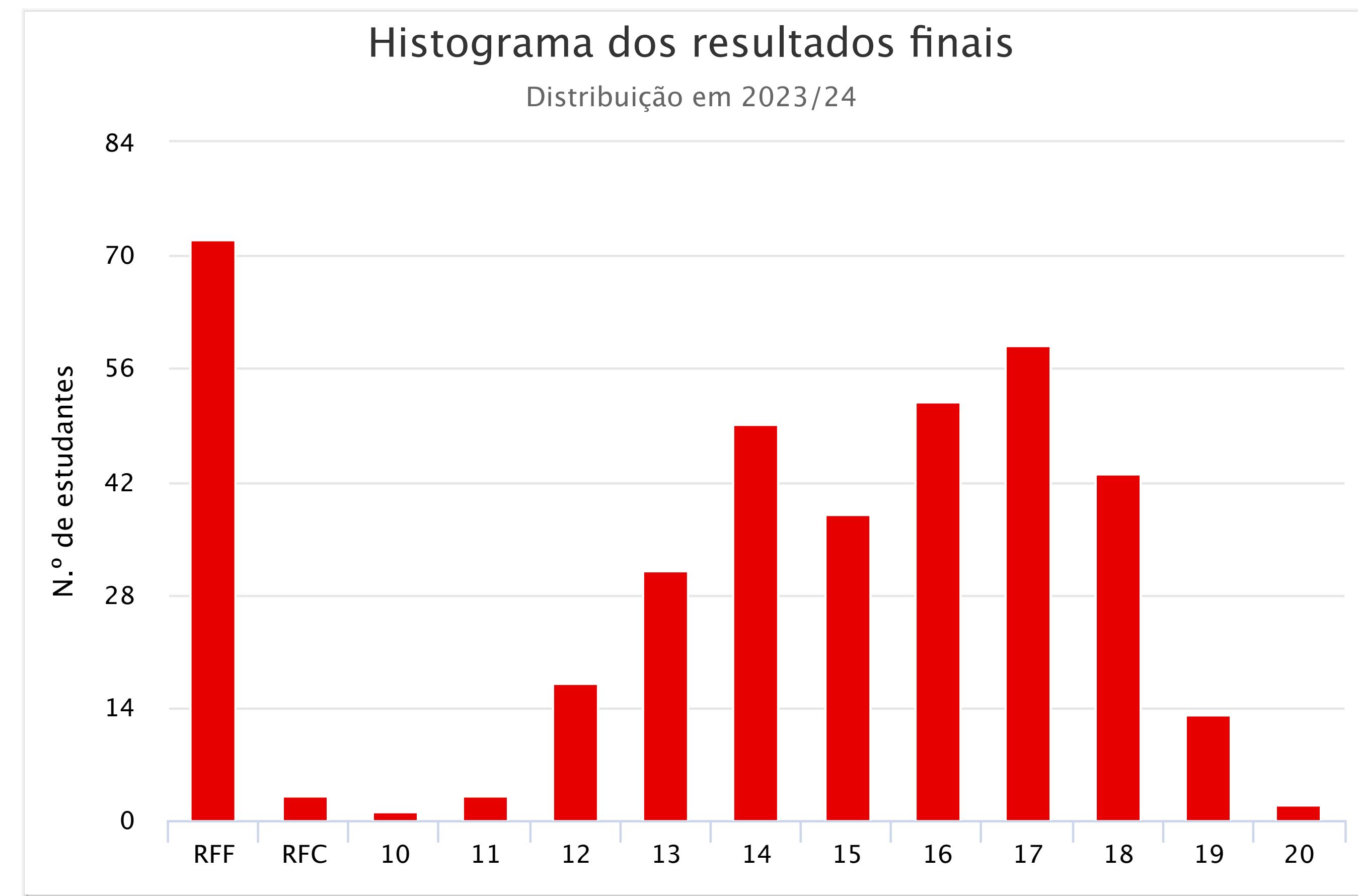
- Obtaining approval in the project
 - **requires the participation of each student in all phases of the project,**
 - namely in the selection of technologies, in identifying and characterizing the problem, in designing and implementing the solution, in writing the final report, and in the final presentation.
- **Groups are organized by the students.**
 - A Moodle activity will be available for self-organization.
 - During the first lab class remaining students will be organized into groups.

Exam

- The individual exam is a multiple-choice assessment, organized during the exams period.
- Questions address the concepts applied during the semester in the development of the artifacts.

Grades in Previous Edition

- Enrolled: 383
- Approved: 308
- Average final grade: 15,6
- Not evaluated: 67 (RFFs)
- **Main reason for failing in LBAW:**
 - Not participating in all components during the semester!



Common Problems

- *If you only read one slide, this is the one!*
- **Not participating in all components will result in not obtaining frequency.**
 - All students must participate in all parts of the project: database, web application; coding, documenting.
- **Bad division of work, e.g. one student works in the database, other in the web application, other in writing.**
 - This will result in failure by not obtaining frequency.
- **Bad division of labor, e.g. one or two students doing all the work.**
 - This can lead to burnout and, in most cases, to failure.
 - Identify and communicate these problems as soon as possible.

Project Themes

- The project theme is chosen from a list of proposals.
 - 1. Collaborative News
 - 2. Social Network
 - 3. Online Shop
 - 4. Event Management
 - 5. Collaborative Q&A
 - 6. Online Auctions
 - 7. Project Management
- Each proposal describes a list of functional requirements. Plus, a set of common functional requirements are established for all themes (0. Common Requirements).
- Groups are expect to develop upon the initial list of functional requirements and propose an original project to be developed during the semester. Mandatory requirements contribute to 90% of the project evaluation (18), the remaining 10% (2) are for your ideas and innovation.
- Project themes must be unique per class.

Components + Artifacts

| ER [10] | EBD [25] | | | EAP [25] | | PA [40] | | |
|------------|----------|--------|---------|----------|---------|---------|---------|---------|
| A1, A2, A3 | A4 [10] | A5 [5] | A6 [10] | A7 [10] | A8 [15] | | A9 [35] | A10 [5] |

- **ER: Requirements Specification [10%]**
 - A1: Project presentation [2]
 - A2: Actors and User Stories [4]
 - A3: Information Architecture [4]
- **EBD: Database Specification [25%]**
 - A4: Conceptual Data Model [10]
 - A5: Relational Schema [5]
 - A6: Implemented Database [10]
(constraints, indices, transactions)
- **EAP: Application Architecture and Prototype [25%]**
 - A7: Application Architecture [10]
 - A8: Vertical Prototype [15]
- **PA: Product and Presentation [40%]**
 - A9: Product [35]
 - A10: Presentation [5]

Weekly Workflow

- For each component you will have access to:
 - Artifact descriptions;
 - MediaLibrary examples;
 - GitLab templates;
 - Checklists for Components and Artifacts.
- Development workflow:
 - Collaboratively develop the component using GitLab;
 - Discuss each artifact in lab class together with the checklist filled;
 - Artifacts can be improved until the submission of the components;
 - Export the component to PDF and submit in Moodle (deadline: previous day, before 12h00 - midday).
- *Note that there is a limit to the number of lab classes you can miss (25% / 3 classes).*

Semester Calendar

- Tentative.
- Changes will be highlighted in the schedule (in Moodle).

| # | Week | Lecture (2 x 2h) (Monday) | Lab | Artifact in Focus | Delivery |
|-----|-----------|---|--|-------------------|------------------------|
| 1 | 16 Sep | LBAW Presentation. Projects and Themes. Requirements Specification. | No lab classes on first week. | — | |
| 2 | 23 Sep | Information Architecture. | Student groups setup. Project presentation (A1). Actors and user stories (A2). | A1 + A2 | |
| 3 | 30 Sep | Conceptual Data Model. PostgreSQL. | Information Architecture (A3) | A2 + A3 | |
| 4 | 7 Oct | Database Indexes. Integrity Constraints. Triggers. | Conceptual Data Model (A4) | A4 | ER (A1 + A2 + A3) |
| 5 | 14 Oct | Transactions. Web Applications. | Relational Schema (A5) | A5 | |
| 6 | 21 Oct | Server-Side Web Technologies Web Resources Specification. | Indexes, Triggers and Database (A6) | A6 | |
| | 28 Oct | FEUP Week | FEUP Week | | |
| 7 | 4 Nov | Laravel. Prototype. | Web Resources (A7) Laravel Setup | A7 | EBD (A4 + A5 + A6) |
| 8 | 11 Nov | Laravel (cont). | Vertical Prototype (A8) | A8 | |
| 9 | 18 Nov | Client-Side Web Technologies. Web Performance. | Vertical Prototype (A8) | A8 | |
| 10 | 25 Nov | Web Usability. Web Performance. | Vertical Prototype Presentation Product (A9) | A9 | EAP (A7 + A8) |
| 11 | 2 Dec | Information Retrieval. | Product (A9) | A9 | |
| 12 | 9 Dec | NOSQL. Product and Presentations. | Product (A9) + Presentation (A10) | A9 + A10 | |
| 13 | 16 Dec | LBAW Review. | Final Product Presentation | — | PA (A9 + A10) |
| ... | | | | | |
| | 6-10 Jan | | | | Public Presentations |
| | Jan / Feb | | | | Exam (Normal + Appeal) |

Materials

- Moodle is the central information hub.
 - For each lecture and lab class, an information page is available
- Moodle is used for:
 - Announcements and discussion (post your questions!)
 - Submission of materials
- Slack:
 - Last minute warnings (rare)
 - In-group communication
- GitLab is used for:
 - Collaborative artifact development
 - Code repository
- Each group has access to a Google Spreadsheet shared with the teachers for recording the checklist evaluation and self-evaluation.

Monitor Support

- We will have a student as monitor for this edition of LBAW.
- Available in Moodle and Slack, plus a weekly session.
- Help you during the semester, mostly with the technologies we will be using.
- Weekly schedule to be defined.

Generative AI Survey

- Understanding and being proficient in these tools is an emerging skill.
- But we also need to have clear expectations to avoid misunderstandings.
- Short survey to understand how it is being used and your perspective on it.

Generative AI Policy

- Use of Generative AI (ChatGPT, Github Copilot, ...) technologies
 - is permitted in specific contexts
 - and with clear acknowledgements.
- Possible uses in the context of LBAW:
 - Brainstorm project ideas
 - Improve text (not write text from scratch)
 - Improve or debug code
 - Generate tests
 - Other? *When in doubt ask in Moodle.*
- In the end, what you submit must be of your authorship.
- If you use these tools, add section to your component reports describing how you have used them, namely the services and prompts used.

Next steps

- Answer the ‘LBAW Survey’ + ‘GenAI Survey’ (if you haven't done so).
- Read the project rules.
- Set up a Google U.Porto Account.
- Prepare for the first lab class (only start next week!):
 - review the project topics and identify your preferences;
 - pro-actively for the groups to be set up.
- First delivery in three weeks (October 7th week) - Requirement Specifications Component.

Questions or comments?

*Your questions help in understating what needs more attention.
What requires more details.*

Questions

- Grades will be published for each component during the semester?
- Component grades can be improved?
- Can different project themes be proposed?
- Can we use a different technologies?
- What happens if a member abandons the group?