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1. **PART I**

| **1. Personal Background** |
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| Below is a table in which you must complete the requested information. |

| Student name | **Julio Andrés Contreras Olate** |
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| Ruth | **21.328.315-4** |
| Career | **Computer Engineering** |
| Headquarters | **Antonio Varas** |

| Student name | **Renato Arrué** |
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| Ruth | **21.299.755-2** |
| Career | **Computer Engineering** |
| Headquarters | **Antonio Varas** |

| **2. APT Project Description** |
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| In the description, you should briefly describe the name of your APT project and the graduate profile competencies you will implement. If your program defines performance areas, also mention which performance areas the project is linked to. |

| Project name | *DuocUC Academic Chatbot* |
| --- | --- |
| Area(s) of performance(s) | * Artificial intelligence * Process Automation * Software Development * User Support / Academic Support |
| Competencies | * Develop software solutions applying computer science methodologies and technologies. * Use artificial intelligence and automation techniques to solve real problems. * Integrate systems and services aimed at improving institutional processes. * Manage technological development projects considering deadlines and resources. |

| **3. APT Project Foundation** |
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| Below are various fields that you must complete with the requested information. This section aims to help you describe your project in detail and justify its relevance and suitability. |

| Relevance of the APT project | Currently, the registration and course-taking process at the Professional Institute can be slow and generate questions among students, especially when there are issues with availability, section changes, or administrative inquiries. This causes overload on institutional platforms and support staff.  The development of an intelligent chatbot will automate these tasks, providing quick responses to frequently asked questions and directly managing course registration based on available space. This contribution is significant as it streamlines the academic process, optimizes administrative resources, and improves the student experience. |
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| APT Project Description | The project involves developing an artificial intelligence chatbot that allows students to:   * Check availability of subjects and places. * Register or make changes to courses/sections. * Resolve frequently asked questions (schedules, requirements, important dates).   The system will be integrated with a database of student subjects and will feature a conversational environment accessible via the web and/or mobile app. |
| Relevance of the project to the graduate profile | This project reflects the competencies of the Computer Science degree program's graduate profile, applying knowledge of software development, systems integration, artificial intelligence, and project management to solve a real-world academic problem. |
| Relationship with professional interests | The project aligns with the team's professional interests in the areas of artificial intelligence, automation, and the development of technological solutions for education. The implementation of this chatbot strengthens their experience in using AI applied to real-world problems, contributing to their future professional development. |
| Feasibility of developing the APT Project | The development of the chatbot is entirely feasible within the academic semester, given that it is a functional prototype designed to demonstrate skills acquired during the program.   1. Semester length: We have a full semester for planning, design, development, testing, and delivery, allowing us to divide the work into agile phases. 2. Technical resources: The project can be developed with free tools such as Rasa, Dialogflow, or Botpress, open-source databases, and low-cost or free cloud services. 3. Team capabilities: Knowledge of programming, databases, AI, and project management acquired throughout the program. 4. External factors that facilitate development: access to technical documentation, availability of mock APIs, and student feedback. 5. External factors that hinder development: Integration with real systems will be addressed with simulated databases; limited time will be managed by prioritizing critical functionalities.   Justification: The project is feasible because it fits within the team's time, resources, and knowledge requirements. Furthermore, as an academic prototype, adaptations and simulations can be made to demonstrate professional competencies without requiring large financial investments. |

1. **PART II**

| **4. Objectives** |
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| In this section, you must define the general and specific objectives of the APT Project. It is important to clarify that the objectives should be stated clearly, concisely, and without further explanation; that is, they should be self-explanatory. It is suggested that they be written using an infinitive verb, as this requires specifying specific actions. |

| General objective | General objective: Develop an intelligent chatbot that automates the course registration process and provides support for frequently asked questions from students at the Professional Institute, improving administrative efficiency and user experience. |
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| Specific objectives | * Analyze the current enrollment and student inquiries process to identify requirements. * Design the chatbot architecture and its integration with the academic database. * Implement AI modules for natural language understanding and decision making. * Develop the functionalities for registration, querying quotas, and answering frequently asked questions. * Test, validate, and adjust the prototype with real-life scenarios. * Document and present the results of the project. |

| **5. Methodology** |
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| In the following section, you must describe the methodology, specific to your discipline, that you will use to complete the APT project described above, including the stages and working methods. |

| Description of the Methodology |
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| The project will be developed following an agile methodology (Scrum), organizing the work into development sprints and partial deliverables. Stages: 1. Requirements gathering. 2. Architecture and conversational flow design. 3. Chatbot implementation. 4. Testing and validation. 5. Final delivery.  Group roles: integration and database, conversational AI development, frontend/UI, documentation and testing. |

| **6. Evidence** |
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| Next, describe what evidence will be assessed in your APT project progress report and final report. This evidence should be agreed upon with your instructor.Evidence will be understood as the products developed during the project and whose purpose is to make visible or document how the work has been implemented. |

| **Type of evidence**  **(advance or ending)** | **Name of the evidence** | **Description** | **Justification** |
| --- | --- | --- | --- |
| **Progress – Phase 1 (Individuals)** | Individual Evidence Phase 1 (.docx) | *Three documents are attached in Word format: Competency Self-Assessment, Reflection Journal, and Final Self-Assessment. In these documents, each member reflects on the skills applied and learning achieved in the initial phase.* | They allow for the assessment of the degree of appropriation of professional competencies and the capacity for critical self-assessment in the first stage. |
| **Progress – Phase 1 (Group)** | Group evidence Phase 1 | They include the Student Guide – APT Project Definition (.docx) and the Phase 1 Project Presentation (.pptx). | They describe the formal definition of the project, its rationale, and the initial presentation to the teacher and classmates. |
| **Progress – Phase 1 (Evaluation)** | Phase 1 Evaluation Form (.xlsx) | Official document requested by the teacher for the first phase evaluation. | It allows to validate the fulfillment of the objectives and products established for Phase 1. |
| **Preview/Final – Phase 1 (Group)** | Consolidated report Phase 1 (.docx / .pptx) | Final document and/or presentation that compiles the work developed in the first phase, including background, rationale, objectives, and initial planning of the APT project. | It allows for a comprehensive evaluation of the results achieved in phase 1, consolidating both individual and group contributions and ensuring project coherence before moving on to phase 2. |
| **Progress – Phase 2 (Individuals)** | Individual Evidence Phase 2 (.docx) | Includes the Phase 2 Reflection Journal, where each member describes the learnings, difficulties, and achievements of the development stage. | It promotes self-reflection and the linking of skills with practice during implementation. |
| **Preview/Final – Phase 2 (Group)** | Group evidence Phase 2 | Two main deliverables are presented: APT Project Development Document (.docx) and Final Report Phase 2 (.docx). | They allow technical documentation of the progress and results achieved in the implementation of the chatbot. |
| **Progress/Final – Phase 2 (Project)** | Phase 2 Project Evidence | They include the Phase 2 Project Presentation (.pptx), the developed application and the associated database. | They show the functional status of the system and allow its applicability to be validated with users and teachers. |
| **Progress – Phase 2 (Evaluation)** | Phase 2 Evaluation Form (.xlsx) | Official document requested by the teacher. | It allows to formally validate the evaluation of the second phase of the project. |
| **Progress – Phase 3 (Individuals)** | Individual Evidence Phase 3 (.docx) | Final reflection journal where each member shares lessons learned, challenges overcome, and personal conclusions. | It allows to consolidate the training process from an individual perspective. |
| **Final – Phase 3 (Group)** | Group evidence Phase 3 | Final presentation of the project (.pptx) to the evaluation committee. | It allows you to display the complete solution, results and contributions of the chatbot. |
| **Final – Phase 3 (Evaluation)** | Phase 3 Evaluation Form (.xlsx) | Official document requested by the teacher. | It allows to formally validate the final phase of the project. |

| **7. Work Plan** |
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| In the following table, define your APT Project planning according to the requirements. |

| **APT Project Work Plan** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| Competence or units of competences | Name of Activities/Tasks | Description Activities/Tasks | Resources | Duration of the activity | Responsible[[1]](#footnote-0) | Observations |
| ***Requirements gathering, systems analysis*** | Requirements analysis and data collection | Identification of student needs and the current enrollment process. | *Interviews, forms, Google Forms, laptop* | *3 weeks (W1–W3)* | *Julio Contreras* | There may be difficulties in obtaining information from real systems → a simulated database will be used. |
| ***Software design, process modeling*** | *Designing conversational flows and chatbot structure* | *Creating conversation diagrams, bot intentions, and responses.* | *Draw.io, Lucidchart, laptop* | *2 weeks (W3–W4)* | *Renato Arrué* | *It facilitates further development by having clear flows; it can be adjusted based on feedback.* |
| ***Software architecture and project management*** | *Tool selection and architectural design* | *Define frameworks, language, database and integration scheme.* | *Technical documentation, forums, laptop* | *2 weeks (W4–W5)* | *Julio Contreras* | *Risk of incompatibility between tools → open-source solutions will be chosen.*   |  | | --- | |
| ***Programming and software development*** | *Initial implementation of the chatbot (basic responses + Excel connection)* | *Development of a basic functional chatbot capable of answering FAQs and connecting to a test database.* | *Python/Node.js, Rasa/Dialogflow, Excel/simulated DB* | *3 weeks (W6–W8)* | *Renato Arrué* | *It will start with minimum viable functionalities (MVP).* |
| ***Applied artificial intelligence*** | *Integration of AI and Natural Language Processing (NLP)* | *incorporate natural language understanding and train the bot with a query dataset.* | *Rasa NLU/Dialogflow, own dataset, laptop* | *3 weeks (W8–W10)* | *Julio Contreras* | *Training may require constant adjustments and testing.* |
| ***Software validation, QA*** | *Testing and validation with simulated cases* | *Functional and user testing with simulated academic scenarios.* | *Test cases, simulated users, laptop* | *3 weeks (W11–W13)* | *Renato Arrué* | *Limitation: Will not connect to real systems; tests will be simulated.* |
| ***Continuous improvement, software optimization*** | *Adjustments and improvements* | *Bug fixes and optimization of responses and conversational flows.* | *Test results, source code* | *2 weeks (W13–W14)* | *Julio Contreras* | *Adjustments will depend on feedback received.* |
| ***Technical and academic documentation*** | *Project documentation (technical report)* | *Drafting of the final report with a description of the process, results and conclusions.* | *MS Word, formatting standards, laptop* | *2 weeks (W15–W16)* | *Renato Arrué* | *Facilitates the formal evaluation of the project.* |
| ***Professional communication and presentation*** | *Final prototype presentation (PPT + demo)* | *Preparation of slides and demonstration of the chatbot working.* | *PowerPoint, laptop, projector* | *2 weeks (W17–W18)* | *Julio Contreras* | *Rehearse beforehand to ensure adequate exposure time.* |

| **8. Gantt chart** |
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| Find a Gantt chart format that suits you and organize the activities planned in the previous point, taking into account the period assigned for the development of your APT Project. You must maintain the academic period in the development of the three phases of the Degree Portfolio Course. |

| **Activity** | **Phase 1** | | | | **Phase 2** | | | | | | | | | | | | **Phase 3** | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S 1** | **S 2** | **S 3** | **S 4** | **S 5** | **S 6** | **S 7** | **S 8** | **S 9** | **S 10** | **S 11** | **S 12** | **S 13** | **S 14** | **S 15** | **S 16** | | **S 17** | **S 18** |
| ***Requirements analysis and data collection*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| **Designing conversational flows and chatbot structure** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| **Tool selection and architectural design** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| **Initial implementation of the chatbot (basic responses + Excel connection)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| **Integration of AI and Natural Language Processing (NLP)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| **Testing and validation with simulated cases** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| **Adjustments and improvements** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| **Project documentation (technical report)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |
| **Final prototype presentation (PPT + demo)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |

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### **Gantt chart (simplified text)**

* **Requirements analysis and data collection**→ S1 – S3
* **Designing conversational flows and chatbot structure**→ S3 – S4
* **Tool selection and architectural design**→ S4 – S5
* **Initial implementation of the chatbot (basic responses + Excel connection)**→ S6 – S8
* **Integration of AI and Natural Language Processing (NLP)**→ S8 – S10
* **Testing and validation with simulated cases**→ S11 – S13
* **Adjustments and improvements**→ S13 – S14
* **Project documentation (technical report)**→ S15 – S16
* **Final prototype presentation (PPT + demo)**→ S17 – S18

1. If the APT Project is a group project, the names of those responsible for each task or activity should be indicated in this column. This will later allow for different evaluations for each member. [↑](#footnote-ref-0)