TEAM CHARTER - Integrating Nuclear and Renewable Energy Sources

I. Rosters (Finish your own rosters)

**Student Roster**

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| --- | --- | --- | --- | --- | --- | --- |
| **Name /**  **Contact Info** | **Current Technical Expertise** | **Future Technical Expertise** | **Technical Focus** | **Current Teaming/ PM Expertise** | **Future Teaming/ PM Expertise** | **Teaming / PM Role** |
| Adria Peterkin  914-434-5173  apeterkin@berkeley.edu | Chemical Engineering and Secondary Industry processes | Nuclear Technology and Renewable integration | Adria will apply her knowledge in Chemical Engineering to advance the process of the system | Research | Systems Engineering and Project Management | Research and Project Management |
| Joseph Lee  770-820-2887  jlee960@berkeley.edu | Mechanical and Nuclear Engineering and Power Plant function knowledge | Understanding of modeling nuclear-renewable load. following | Joseph will use his knowledge in mechanical system to do quantitative analysis (temperature analysis, load following characteristics) | Research | Scope management and project direction | Research and project direction |
| Pedro Vicente/  222-670-6304/  pedro.vicentevz  @berkeley.edu | Material Science and Secondary Industry Processes Knowledge | Knowledge in hardware interconnection in nuclear-hybrid energy systems. | Pedro will apply his knowledge in materials to take into account their response in various stressful scenarios. | Research PM | Project Management and Team Development | Project Management and Point of Contact\* |

\*Roles in Teaming/PM Role may be rotated frequently

**Advising Roster**

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| --- | --- | --- | --- |
| **Name** | **Email/Phone** | **Advising Role** | **Affiliation** |
| **Massimiliano Fratoni** | **maxfratoni@berkeley.edu/510-664-9079** | **Faculty Advisor** | **Nuclear Engineering Department at UC Berkeley** |

II. Project Objective

**High-Level Description**

The scope of this project is to identify the operational requirements for nuclear reactors to be integrated into a grid with deep renewables penetration. The project will investigate the best strategies for load following, the process feasibility of automating reactor control reducing operational costs, and the impact on licensing requirements.

**Project Objective Statement**

The objective of the project is to integrate nuclear and renewable energy for a zero greenhouse gas emission electricity grid.

Motivation: With the growing impact of intermittent energy sources (e.g. wind and solar), the supply of electricity has often been greater than the demand for electricity or “load”. This has caused the price of electricity to plummet in these periods of electricity excess and reduced the financial return on nuclear power plants. As a result, flexibility in power production is needed for nuclear power plants (NPP) to stay competitive. While there are methods of reducing power production in NPPs, this method causes more issues as it introduces strain to the system without financially benefiting the plant.

**Vision of Success**

During this project, we will be researching the feasibility of integrating nuclear and renewable energy. Our vision of success is to fully characterize the integration and functionality of the projected energy generation system; including how we intend to respond to changing demands. A model will be generated to show how quickly our system will adapt to changes in energy demand, while demonstrating the electrical and economic efficiency of the overall design.

**Possible Problems**

Some of the possible problems that may arise throughout the progress of this project include: limited timeframes, complexity of the integration, and limited knowledge on specific areas. To mitigate the effects of these issues, we will perform the following:

* Ensure the workload of our project is consummate with our time frame
* Maintain close communication with industry professionals
* Simplify the problem through valid assumptions

III. Making Decisions

We will have a shared leadership model: We will prioritize consensus whereby everyone in the teamdebatesuntil a decision is reached. As a last resort, if a consensus has not been reached, a democratic process will be used wherein decisions are reached by majority vote.

IV. Communication Plan

In-Person Meetings

* *Location:* Etcheverry Hall (room may change)
* *Time:* Thu or Fri, 10-11 AM (time may change)
* *Duration:* Approximately 1 hour
* *Frequency:* weekly; later in the term, may be adjusted to twice per week

Remote Meetings

* *Internal:* While in-person meetings are preferred, we can meet virtually if needed using services like skype or zoom or use google email to communicate any questions or deliver results or any other information.

Emergencies:

* If someone can’t make our regular in-person meeting, they will contact the team at least **2hr**s prior to start of the meeting.
* To ensure everyone’s health: please call in remotely if you’re sick.

V. Ground Rules

*Communication*

* *Be on time for meetings (Berkeley time is accepted)*
* *Be attentive at meetings*
* *Let others know if one cannot finish their work or they feel their work is too much for one person (don’t be afraid to ask for help)*
* *If there are things that still need to be discussed at beyond the end of the meeting’s time, we'll discuss the possibility of extending the meeting beyond scheduled time.*
* *Written deliverables and communications need to be**read before a meeting to be able to discuss them more fluently*
* *Team members are expected to be respectful and listen to the person talking without interrupting them or being distracted*
* *If a conflict arises with a specific person address that person directly*
* *Do not be condescending*
* *Be open to criticism and be able to adjust to new information*

*Pet Peeves* and Team Building

**Pet Peeves**

* *Aggressive communication*
* *Poor documentation*

*Project Execution*

* *Complete tasks on time*
* *Be accountable for your work*
* *Prioritize team's objective over individual objectives*
* *Address problems or challenges that may inhibit completion of a team’s or individual’s task as soon as possible*
* *Relay useful or important information to other team members*

**Signatures**

As members of Integrating Nuclear and Renewable Energy Sources Capstone Project, we acknowledge the communication plan, ground rules, and individual responsibilities set forth by the team charter.

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| Name Massimiliano Fratoni | Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Name Pedro Junior Vicente Valdez | Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Name Joseph Eui Lee | Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Name Adria Peterkin | Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
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Sign your team charter to symbolically acknowledge that you understand your team’s shared expectations.