



University of California, Santa Barbara
Program Learning Outcomes

PhD in Dynamical Neuroscience

Students graduating with a PhD in Dynamical Neuroscience will be able to:

Core Knowledge

- Demonstrate knowledge of the fundamental concepts and methods of Dynamical Neuroscience, notably the core computational and mathematical methods that have the goal of understanding brain-mind interactions across all levels of architecture, from single neurons to complex networks.
- Demonstrate a deep understanding and expertise in at least one sub-field of Dynamical Neuroscience (e.g., complex neural networks or computational vision).

Research Methods and Analysis

- Plan and execute an original research project in their field, rigorously analyze relevant findings and draw sound conclusions.
- Demonstrate knowledge and understanding of the mathematical and computational techniques used for modeling neural processes and/or for analyzing neuroscience data relevant to their major field of study.
- Review, critically assess and cogently synthesize relevant literature in their field, guided by an understanding of neuroscience theory and practice.
- Properly use literature citations and references to make their technical arguments and justify critical assumptions.
- Follow research ethics consistent with the discipline.

Pedagogy

- Communicate the fundamentals of their discipline and major field of study to general or specialized audiences.

Independent Research

- Develop their own programs of theoretically and methodologically rigorous research.
- Design and prepare a project proposal appropriate for their chosen line of research.
- Supervise research assistants effectively.

Scholarly Communication

- Review and cogently synthesize relevant literature.
- Present their research, in short conference paper, poster, and longer colloquium formats.

Continued on Page 2

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- Write articles, chapters, and reviews that are comparable in scope and format to articles that appear in leading peer-reviewed journals in the field of Dynamical Neuroscience.

Professionalism

- Make effective contributions to research teams and laboratory groups.
- Prepare a job application that accurately depicts their knowledge and abilities.
- Select appropriate fellowship or grant opportunities and prepare competitive proposals for them.
- Make effective contributions to university, community, and professional service.