MIT CENTER FOR NEUROBIOLOGICAL ENGINEERING

Neurobiological Engineering Training & Certificate Programs
Program Description & Application Instructions

The MIT Neurobiological Engineering Training Program (NBETP) and associated Certificate Program (NBECP) aim to equip high quality students with outstanding expertise and leadership ability at the intersection of basic neuroscience and engineering. Students are selected from existing MIT graduate programs according to interests and research potential, and will participate for a minimum of two years. Special effort will be made to accept early stage students with risky and ambitious neurotechnology projects. *An NIH-funded T32 grant will support NBETP students (two per year, US citizens and permanent residents only) during their first year of the training program, and will provide both stipend and funds to support professional travel.* Additional NBECP students, including independent fellowship holders, will be able to participate without T32 funding but with the benefits and recognition that come from inclusion in the combined program. All admitted students will earn a Certificate in Neurobiological Engineering following completion of their degree and fulfillment of **five NBETP/CP requirements**:

1. Complete two core classes in neurotechnology: *9.123J Neurotechnology in Action* is required of all trainees, and aims to introduce students to a broad variety of neurotechnology development on campus, and to the faculty leading these efforts. In addition to *9.123J*, one of these three classes must also be selected: *9.422J Principles of Neuroengineering*, *9.670J Materials Physics of Neural Interfaces*, and *9.271J Pioneering Technologies for Interrogating Complex Biological Systems.*
2. Complete a distribution requirement consisting of one neuroscience core subject and one engineering or quantitative course: Neuroscience core subjects include *9.011 Systems Neuroscience*, *9.015J Molecular and Cellular Neuroscience Core I*, or *9.013J Molecular and Cellular Neuroscience Core II*. Quantitative classes include *2.715J Optical Microscopy and Spectroscopy for Biology and Medicine*, *6.021J Cellular Neurophysiology and Computing*, *20.405J Principles of Synthetic Biology*, *20.463J Biomaterials Science & Engineering*, and *20.554J Frontiers in Chemical Biology*. Substitutions are also considered; please justify if proposed.
3. Form a thesis committee that includes joint expertise in neuroscience and engineering, and including at least one CNBE faculty member.
4. Complete one-week training in the responsible conduct of research, IAP subject *9.901*.
5. Participate in NBETP-associated activities, including regular meetings with faculty and CNBE-hosted conferences.

Additional **elective subjects** related to neurotechnology beyond the core and distribution requirements are encouraged, and may be specified on the cover sheet.

To apply to the NBETP and/or NBECP programs, please submit the following materials:

A. The attached cover sheet, filled out and signed by applicant and applicant's advisor.
B. Applicant's MIT transcript.
C. Applicant's CV (≤ 4 pages, NIH biosketch format preferred).
D. A letter of support from the applicant's MIT advisor.
E. A 1-2 page (single spaced, 11-12 point font) statement describing proposed dissertation research in neurotechnology, emphasizing innovative characteristics and impact on neuroscience or neuromedicine. Also include a 1 paragraph summary of applicant's career plan.

Please organize the materials in order into a single PDF file, with filename beginning with the applicant's last name, and submit this electronically to Darlene Ray (*dray@mit.edu*). Applicants will be considered by program faculty and informed of decisions as soon as possible.

Neurobiological Engineering Training & Certificate Programs
Application Cover Sheet

CNBE
MIT CENTER FOR NEUROBIOLOGICAL ENGINEERING

Applicant: _____ **Program entry year:** _____

Advisor: _____

Project title: _____

Course requirements: Please indicate when you plan to take NBETP/CP required classes. Substitutions are also considered; please briefly justify if proposed. Also note that subjects completed as part of departmental requirements may count also towards NBETP/CP requirements. We recommend that all course requirements be completed as early as possible in the program of study. Please list selected courses in each category below, with semester and year of anticipated completion for each class (list completion date if taken already).

Required neurotechnology classes—*9.123J* and one of *9.422J*, *9.670J*, or *9.271J:*

_____

Neuroscience core—at least one of *9.011*, *9.013J*, or *9.015J:*

_____

Engineering core—at least one of *2.715J*, *6.021J*, *20.405J*, *20.463J*, or *20.554J:*

_____

Responsible conduct of research (*9.901*); please use this space also to note any additional neuroengineering electives you plan to take (optional):

_____

If you have already taken equivalent subjects outside of MIT and wish to substitute them for NBETP/CP requirements, please explain in the e-mail accompanying your application. Please also provide the syllabus of the class you took and the grade you earned.

I wish to be considered for Neurobiological Engineering training grant funding (yes/no): _____

I wish to be considered for admission into the Neurobiological Engineering Certificate Program even if I am not supported by the NIH-funded NBETP training grant (yes/no): _____

By signing below, I certify that I have understood and accept the requirements for participation in the Neurobiological Engineering Training and Certificate Programs.

Applicant's signature: _____ **Date:** _____

Advisor's signature: _____ **Date:** _____