Instrumentation and Measurement

Faculty: Mark Bathe, Paul Blainey, Ed Boyden, Alan Grodzinsky, Jongyoon Han, Maxine Jonas, Alan Jasanoff, Roger Kamm, Amy Keating, Robert Langer, Harvey Lodish, Scott Manalis, Katharina Ribbeck, Peter So, Bruce Tidor, Krystyn Van Vliet, Steve Wasserman

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Description: The biophysics and instrumentation concentration will build a foundation in the physical principles underlying Nature’s machinery from both a theoretical and experimental perspective spanning single molecule measurements of biological motors to cell and tissue level machinery. The area encompasses foundational subjects in experimental biophysics including introduction of advanced measurements such as imaging and spectroscopy and skills used to build instrumentation.

Guide for class selection: Any three courses from the list below may be taken to satisfy this concentration.

Restricted Electives

2.131 Advanced instrumentation and measurement (U)
Prereq: Permission of Instructor

2.671 Measurement and instrumentation (U)
Prereq: 2.001 or 2.01; 2.003 or 2.03; 2.086; Physics II

2.71 Optics (U)
Prereq: Physics II GIR; 18.03; 2.004, 2.04A, 2.04B; or permission of instructor

2.715 Optical Microscopy & Spectroscopy for Biology and Medicine (G) same as 20.487
Prereq: permission of instructor

2.717 Optical Engineering (G) same as MAS.857
Prereq: 2.710 or permission of instructor

6.002 Circuits and Electronics (U)
Prereq: Physics II GIR; coreq: 18.03

6.003 Signals and systems (U)
Prereq: Physics II (GIR); 2.087 or 18.03

6.071 Electronics, Signals, and Measurement (U)
Prereq: 18.03

20.345 Project lab (U)
Prereq: Biology (GIR), and 2.004 or 6.003; or 20.309