

## GENERAL INSTITUTE REQUIREMENTS

### Laboratory Requirement

The Institute Laboratory Requirement consists of subjects that require a major commitment of the student's attention in comprehensive projects rather than stand-alone experiments or exercises. The primary emphasis of an Institute Laboratory subject is to stimulate a student's resourcefulness, planning skills, and analysis of observations. Institute Laboratory subjects combine ideas, methods and techniques that would be familiar to a professional in the subject's discipline. While a Laboratory subject may teach specific techniques, the techniques themselves are not the primary emphasis. Under faculty supervision, the student is responsible for planning and designing the experiments or projects, including selecting measurement techniques, executing the plan, analyzing results, and presenting their conclusions. Details of the elements that comprise an Institute Laboratory subject differ between disciplines.

The Laboratory Requirement is met by successfully completing subjects designed and approved for this purpose. Each Institute Laboratory subject provides a designated number of units toward the Laboratory Requirement. Such subjects may be taken in any combination to fulfill the Requirement so long as the student completes 12 units in sum designated as counting towards the Laboratory Requirement. Any units taken as part of these subjects beyond the 12 needed for completion of the Laboratory Requirement will be counted as units beyond the GIRs. At least a portion of the Laboratory Requirement is suggested to be fulfilled in the first two years.

### Laboratory Requirement Subjects

|           |  |    |            |   |    |
|-----------|--|----|------------|---|----|
| 1.101     | Introduction to Civil and Environmental Engineering Design I               | 6  | 5.351      | Fundamentals of Spectroscopy  | 4  |
| 1.102     | Introduction to Civil and Environmental Engineering Design II              | 6  | 5.352      | Synthesis of Coordination Compounds and Kinetics                    | 5  |
| 1.106     | Environmental Fluid Transport Processes and Hydrology Laboratory           | 6  | 5.353      | Macromolecular Prodrugs   | 4  |
| 1.107     | Environmental Chemistry Laboratory   | 6  | 5.363      | Organic Structure Determination                                     | 4  |
| 1.108     | Climate and Sustainability Lab   | 12 | 6.1010     | Fundamentals of Programming   | 12 |
| 2.008     | Design and Manufacturing II (6 units of laboratory credit)                 | 12 | 6.2040     | Analog Electronics Laboratory                                       | 12 |
| 2.017[[]] | Design of Electromechanical Robotic Systems (6 units of laboratory credit) | 12 | 6.2050     | Digital Systems Laboratory  | 12 |
| 2.124[[]] | Robotics: Science and Systems  | 12 | 6.2060     | Microcomputer Project Laboratory                                    | 12 |
| 2.671     | Measurement and Instrumentation  | 12 | 6.2220     | Power Electronics Laboratory  | 12 |
| 3.010     | Structure of Materials   | 12 | 6.2370     | Modern Optics Project Laboratory                                    | 12 |
| 4.411[[]] | D-Lab Schools: Building Technology Laboratory                              | 12 | 6.3100     | Dynamical System Modeling and Control Design                        | 12 |
| 5.310     | Laboratory Chemistry   | 12 | 6.3400     | Introduction to EECS via Communication Networks                     | 12 |
|           |  |    | 6.3800     | Introduction to Inference   | 12 |
|           |  |    | 6.4200[[]] | Robotics: Science and Systems                                       | 12 |
|           |  |    | 6.4900     | Introduction to EECS via Medical Technology                         | 12 |
|           |  |    | 6.9010     | Introduction to EECS via Interconnected Embedded Systems            | 12 |
|           |  |    | 6.9030     | Strobe Project Laboratory   | 12 |
|           |  |    | 6.9080     | Introduction to EECS via Robotics                                   | 12 |
|           |  |    | 7.002      | Fundamentals of Experimental Molecular Biology                      | 6  |
|           |  |    | 7.003[[]]  | Applied Molecular Biology Laboratory (6 units of laboratory credit) | 12 |
|           |  |    | 7.102      | Introduction to Molecular Biology Techniques                        | 6  |
|           |  |    | 8.13       | Experimental Physics I (12 units of laboratory credit)              | 18 |
|           |  |    | 9.12       | Experimental Molecular Neurobiology                                 | 12 |
|           |  |    | 9.17       | Systems Neuroscience Laboratory                                     | 12 |
|           |  |    | 9.59[[]]   | Laboratory in Psycholinguistics                                     | 12 |
|           |  |    | 9.60       | Machine-Motivated Human Vision                                      | 12 |
|           |  |    | 11.188     | Introduction to Spatial Analysis and GIS Laboratory                 | 12 |
|           |  |    | 12.110A    | Sedimentary Environments  | 6  |
|           |  |    | 12.110B    | Sedimentology in the Field  | 9  |
|           |  |    | 12.115     | Field Geology   | 9  |
|           |  |    | 12.116     | Analysis of Geologic Data (3 units of laboratory credit)            | 6  |
|           |  |    | 12.307     | Weather and Climate Laboratory (12 units of laboratory credit)      | 12 |
|           |  |    | 12.335     | Experimental Atmospheric Chemistry                                  | 12 |

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|            |  |    |
|------------|--|----|
| 12.373     | Field Oceanography (12 units of laboratory credit)   | 15 |
| 12.410[[]] | Observational Techniques of Optical Astronomy (12 units of laboratory credit)              | 15 |
| 14.32      | Econometric Data Science   | 12 |
| 15.075[[]] | Statistical Thinking and Data Analysis   | 12 |
| 15.076     | Analytics for a Better World   | 12 |
| 15.301     | People, Teams, and Organizations Laboratory (12 units of laboratory credit)                | 15 |
| 15.417     | Laboratory in Investments (12 units of laboratory credit)                                  | 15 |
| 15.418     | Laboratory in Corporate Finance (12 units of laboratory credit)                            | 15 |
| 16.622     | Experimental Projects II   | 12 |
| 16.821     | Flight Vehicle Development (12 units of laboratory credit)                                 | 18 |
| 16.831[[]] | Space Systems Development (12 units of laboratory credit)                                  | 18 |
| 17.803     | Political Science Laboratory (12 units of laboratory credit)                               | 15 |
| 18.821     | Project Laboratory in Mathematics  | 12 |
| 20.109     | Laboratory Fundamentals in Biological Engineering (12 units of laboratory credit)          | 15 |
| 20.129[[]] | Biological Circuit Engineering Laboratory  | 12 |
| 21H.090    | Digital Humanities Laboratory  | 12 |
| 22.09      | Principles of Nuclear Radiation Measurement and Protection (12 units of laboratory credit) | 15 |
| 24.909     | Field Methods in Linguistics   | 12 |