**DBMI REQUIREMENTS**

**INCOMING PHD & POSTDOCTORAL DEGREE STUDENT COHORT 2015-2016**

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| Core Classes – 5 courses | BINF G4000 Acculturation to Programming & Statistics (Fall)  BINF G4001 Introduction to Computer Applications in Health Care & Biomedicine (Fall)  BINF G4003 Methods I: Symbolic Methods (Fall)  BINF G4002 Methods II: Computational Methods (Spring)  BINF G6002 Methods III: Research Methods OR BINF G4015 Computational Systems Biology (not both) (both offered in Spring) | BINF G4000 requires permission of instructor. Students may be exempted from BINF G4000 at instructor’s discretion.  BINF G4001 must be taken fall term of entry  BINF G4002 requires working knowledge of programming, data structures and algorithms that can be fulfilled by successful completion of BINF G4000. Enrolment in BINF G4002 is by permission of instructor.  BINF G4003 requires permission of instructor. |
| Objectives – 3 courses total, 3 different categories: qualitative, quantitative, information technology. Objective category for each PhD student is determined by concentration (BIO, CL, TR, Data Science, PH).  Data Science (DS), Translational (TR), and Bioinformatics (BIO) – 2 Quantitative and 1 Information Technology  Clinical (CL) and Public Health (PH) – 2 or 3 courses total chosen from among the Qualitative, Quantitative, or Information Technology categories. If taking only 2 objectives, 3 courses must be taken from the Domain category below. If taking 3 objectives, 2 courses are required from the Domain category below. | Qualitative:  NURS N9352 Qualitative Research Design & Methods  COMS W4170 User Interface Design  Quantitative:  HBSS 4199 or HBSS 4160 Introduction to Biostatistics (Teachers College)  QMSS G4063 Data Visualization (Teachers College)  COMS W4705 Natural Language Processing  COMS W4771 Machine Learning  COMS W4772 Advanced Machine Learning  STAT W4240 Data Mining  STAT W4026 Applied Data Mining  STAT G6509 Foundations of Graphical Models  STAT G6104 Applied Statistics  BIST P6104/P6114 Introduction to Biostatistical Methods  BIST P8116 Design of Medical Experiments  BIST P9120 Topics in Statistical Learning and Data Mining  Information Technology:  QMSS G4063 Data Visualization  COMS W4111 Introduction to Databases  CSOR W4246 Algorithms for Data Science  COMS W4156 Advanced Software Engineering  COMS W4231 Analysis of Algorithms  COMS W4444 Programming and Problem Solving  COMS E6111 Advanced Database Systems | Enrollment in some courses restricted to the cross registration change of program period *(*[*http://registrar.columbia.edu/academic-calendar/6*](http://registrar.columbia.edu/academic-calendar/6)*)*. Mailman School of Public Health uses separate forms (see DBMI website). Others use add/drop forms *(http://registrar.columbia.edu/registrar-forms)* |
| Domain – 2 courses for Data Science (DS), Translational (TR) and Bioinformatics (BIO) students from one of four concentration categories: Clinical (CL), Biological (BIO), Translational (TR), and Public Health (PH). Clinical (CL) and Public Health (PH) students may take 2 or 3 courses, dependent upon number of objectives taken above. For t hose students, if taking 2 domain, take 3 objectives above. If taking 3 domain, take 2 objectives above. | Clinical:  BINF G4004 Applied Clinical Information Systems  BINF G4005 Process Redesign in Complex Organizations  BINF G4011 Acculturation to Medicine and Biomedical Informatics  PATH G6003 Mechanisms in Human Disease  Biological:  BINF G4011 Biological Sequence Analysis  BINF G4015 Computational Systems Biology  BINF G4016 Quantitative/Computational Aspects of Infectious Dis  BINF G4017 Deep Sequencing  COMS W4761 Computational Genomics  BIOL W4510 Genomics of Gene Regulation  BIST P8119 Advanced Stat/Comp Methods Genetics/Genomics  Other courses at http://systemsbiology.columbia.edu/courses  Translational:  BINF G4006 Translational Bioinformatics  PATH G6003 Mechanisms in Human Disease  PHAR G8001 Principles of System Pharmacology  BIOT W4200 Biopharmaceutical Development & Regulation  COMS E6998 Computational Methods/High Throughput Sequencing  Public Health:  BINF G4062 Public Health Informatics  EPID P6400/02 Epidemiology  EPID P8471 Social Epidemiology  SOSC P8795 New Media and Health  BIST P6530 Issues & Approaches in Health Policy & Management  EHSC P6385/6 Principles of Genetics and the Environment I and II |  |
| Research – Every fall & spring for PhD and Postdoctoral MA | BINF G6001 Projects in Biomedical Informatics (3, 6, or 9 points)  BINF G9001 Doctoral Research *after MPhil* (12 points)  BINF G9999 Doctoral Dissertation *in last term* (0 points) | BINF G6001, 6 points-PhD and Postdoctoral MA in 1st yr  BINF G6001, 9 points-PhD and Postdoctoral MA in 2nd year  BINF G6001 or BINF G9001 (semester after passing Oral II/Breadth Exam, PhD students enroll in BINF G9001. See *DBMI Trainee Handbook* on website),  12 points-PhD & Postdoc MA 3rd and subsequent years |
| Research Seminar – Every fall and spring term for CL/PH/TR students. First year for BIO students. | BINF G4099 Research Seminar (P/F) | Passing dependent upon attendance as monitored by a sign-in sheet. |
| Ethics Course – 1 for PhD & Postdoctoral MA | CMBS G4010 Responsible Conduct of Research & Related Policy Issues | Must take spring term of first year. |
| Teaching Assistant (TA) - 2 courses | BINF G8010 MPhil Teaching Experience (2 points) | TA for 2 separate classes. Preferences solicited by email in spring term from faculty and students. Final selection made by Training Committee, not instructors |
| Master’s Essay – Postdoctoral MAs | BINF G6001 Projects in Biomedical Informatics | Download MA essay form for signatures from DBMI website. Requires 2nd reader (faculty member appointed in DBMI) and signature of chair. |
| Oral I/Breadth Exam –Postdoctoral MA & PhD | Submit MA degree application to CU registrar’s office *(http://registrar.columbia.edu/registrar-forms/application-degree-or-certificate)* | Eligibility restricted to those who have completed the core classes and 3 terms (fall, spring, fall). |
| Oral II/Depth Exam–PhD | To be scheduled when you are within 6 months of your Dissertation Proposal Exam. See *DBMI Trainee Handbook* for instructions. | After successful completion of this exam, register for BINF G9001 Doctoral Research 12 points in lieu of BINF G6001 Projects. You are now eligible for conferral of your MPhil. The MPhil diploma paperwork will be submitted by the Graduate Program Manager to the GSAS Office of Dissertations. |