

Oncology 675, Section 002 (3 credits)

Mining Genomics Data (Fall 2024)

Instructor: Huy Dinh (Room 7553 WIMR11, huy.dinh@wisc.edu)

Meets: 09:55 am-10:45am Mondays, Wednesdays and Fridays, WIMR11 Room 6571

Course Outline

| Topic | Lectures | Dates |
|---|----------|--------------------------------|
| Introduction & Defining Student Projects: What can we ask and where can we find publicly available data? | 1-2 | Sept 4,6 |
| Programming Basis: What kind of coding do we need to start exploring publicly available data? R & Bioconductor packages | 3-8 | Sept 9,11,13, Sept 16,18,20 |
| Data Analysis Basis: What do we need to start a bioinformatics analysis project? | 9-11 | Sept 23,25,27 |
| Statistical Test Basis: How do we test the significance of phenotypes of interest in genomic data? | 12-17 | Sept 30, Oct 2,4 Oct 7,9,11 |
| Genomic Data Visualization: How do we present genome-wide data analysis? | 18-20 | Oct 14,16,18 |
| Project discussion (1): Finalize analysis plan outline for each group project (question/hypothesis, data type, data sources) | 21-23 | Oct 21,23,25 |
| Project discussion (2): Summarize data format, initial QC and overview analysis of the data. | 24-26 | Oct 28,30, Nov 1 |
| Project discussion (3): Identify phenotype of interest (relevant to the question from (1)) from your dataset of choice. | 27-29 | Nov 4, 6,8 |
| Project discussion (4): Prepare the figures/data to answer the question/hypothesis defined from (1). | 30-34 | Nov 11,13,15 Nov 18*,20,22* |
| Project revision | 35-37 | Nov 25,27 |
| Student Project Presentation | 38-40 | Dec 2,4,6 |
| Student Project Presentation | 41-42 | Dec 9,11 |

* Huy has conflicts and might need to reschedule

Textbook: The course has no assigned textbook; we will suggest relevant readings/textbooks based on students' needs.

Office hours: By appointment (based on need and availability). Students are expected to work on coding exercises 2 hours per week for Friday class discussion sessions and are encouraged to meet each other and the instructor for further discussions.

Grading: This course will be graded based on class participation and student project preparation and presentation (85%, with 10% from each **Project Discussion step (1-4)** and 20% **final presentation & 25% final report**; 10% feedback/contribution to other projects' presentation & peer-review report; and 5% participation/discussion in class in general).