2023 Syllabus

Lecture days are in black; Discussion days are in blue; Exam days are in red.

Classrooms

All lectures will be held in North Lecture Hall (NLH) in Med Sci II from 9:00am-9:50am. All sessions will be in-person.

For the Discussion Sections, please see the ‘03\_HG541 Discussion Schedule’ document (within ‘Files’ 🡪 ‘Course Documents’) for details, including your assigned Discussion Section. **All Discussion sections will also be held in-person from 9:00-9:50am. (Your assigned sections will only be finalized a week into the course, since the student roster is in flux early in the course.)**

**Review Sessions** for Exams will be held from 8am-9:50am, instead of from 9:00am:9:50am, in NLH.

The Exams will be **take-home** and you will have **24 hrs** to complete them (9am to 9am).

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| **Date** | **Module / Leader** | **Topic** |
| Mon, Aug 28 | **Introduction / Sundeep Kalantry** | Course Overview & Introduction |
| Wed, Aug 30 |  | Strategies for Success in HG545 |
| Friday, Sep 1 | **1- Mendelian Inheritance/ Tony Antonellis** | Mendelian Inheritance I |
| **Mon, Sep 04** | **LABOR DAY** |  |
| Wed, Sep 06  Fri, Sep 08 |  | Mendelian Inheritance II  Experimental Design & Interpretation |
| Mon, Sep 11 | Module 1 Discussion |  |
| Wed, Sep 13 | **2 - Genomes & Chromosomes /**  **Jake Mueller** | Structure of the genome |
| Fri, Sep 15 |  | Comparative genomics |
| Mon, Sep 18 |  | Chromosomes |
| Wed, Sep 20 | Module 2 Discussion |  |
| Fri, Sep 22 | **3 - Genes & Transcription /**  **Jake Mueller** | Genes and basal transcriptional machinery |
| Mon, Sep 25 |  | Gene promoters, enhancers and silencers |
| Wed, Sep 27 |  | Transcription factors and transcriptional control |
| Fri, Sep 29 | Module 3 Discussion |  |
| Mon, Oct 02 | **Review Session for Exam 1** | **Modules 1-3** |
| **Wed, Oct 04** | **EXAM 1** | **Modules 1-3** |
| Fri, Oct 06 | **4 – RNA Processing & Translation / Stephanie Moon** | Splicing |
| Mon, Oct 09 |  | Polyadenylation/post-transcriptional regulation |
| Wed, Oct 11  Fri, Oct 13 | Module 4 Discussion | Translation |
| **Mon, Oct 16** | **FALL BREAK** |  |
| Wed, Oct 18 | **5 – Genome Evolution / John Moran** | DNA transposons and LTR retrotransposons |
| Fri, Oct 20 |  | Poly(A) retrotransposons (SINEs and LINEs) |
| Mon, Oct 23 |  | Poly(A) retrotransposons (SINEs and LINEs) |
| Wed, Oct 25 | Module 5 Discussion |  |
| Fri, Oct 27 | **6 - Replication & Mutagenesis / Tom Wilson** | Replication fidelity mechanisms |
| Mon, Oct 30 |  | DNA damage and repair |
| Wed, Nov 01 | Module 6 Discussion |  |
| Fri, Nov 03 | **Review Session for Exam 2** | **Modules 4-6** |
| Mon, Nov 06 | **EXAM 2** | **Modules 4-6** |
| Wed, Nov 08 | **7 - Meiosis & Recombination / Tom Wilson** | Meiosis and homologous recombination |
| Fri, Nov 10 |  | DNA damage and repair |
| Mon, Nov 13 | Module 7 Discussion |  |
| **Wed, Nov 15** | **8 - Epigenetics: Chromatin & Long noncoding RNAs /**  **Sundeep Kalantry** | Epigenetic inheritance / DNA methylation |
| Fri, Nov 17 |  | Histone modifications |
| Mon, Nov 20 |  | Long non-coding RNAs & 3D Genome Organization |
| Wed, Nov 22 | **THANKSGIVING BREAK** |  |
| Fri, Nov 24 | **THANKSGIVING BREAK** |  |
| Mon, Nov 27 | Module 8 Discussion |  |
| **Wed, Nov 29** | **9 - Epigenetics: Small RNAs / Sundeep Kalantry** | RNA interference |
| Fri, Dec 01 |  | microRNAs and post-transcriptional silencing |
| Mon, Dec 04 |  | piRNAs and endo-siRNAs in gene silencing |
| Wed, Dec 06 | Module 9 Discussion |  |
| Fri, Dec 08 | **Review Session for Exam 3** | **Modules 7-9** |
| Mon, Dec 11 | **EXAM 3** | **Modules 7-9** |