2022 Syllabus – TENTATIVE (Order of Modules may change)

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

Classrooms

All lectures except for the ones highlighted in yellow below will be held in West Lecture Hall (WLH) 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.**

**Review Sessions** for Exams will be held from 8am-9:50am, instead of from 9:00am:9:50am. The Exams will also be **held in class, in person, and on your computer,** also from 8:00am-9:50am to provide sufficient time to complete the exam.

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| **Date** | **Module / Leader** | **Topic** |
| Mon, Aug 29 | **1 - Introduction / Sundeep Kalantry** | Course Overview & Introduction: From Mendel to molecules |
| Wed, Aug 31 |  | Nucleic acids and the central dogma |
| Fri, Sep 02 |  | Recombinant DNA technology |
| **Mon, Sep 05** | **LABOR DAY** |  |
| Wed, Sep 07  Fri, Sep 09 |  | Strategies for success in HG541  How to Design Experiments & Interpret Results |
| Mon, Sep 12 | Module 1 Discussion |  |
| Wed, Sep 14 | **2 - Genomes & Chromosomes /**  **Sundeep Kalantry** | Structure of the genome |
| Fri, Sep 16 |  | Comparative genomics |
| Mon, Sep 19 |  | Chromosomes |
| Wed, Sep 21 | Module 2 Discussion |  |
| Fri, Sep 23 | **3 - Replication & Mutagenesis / Tom Wilson** | Replication fidelity mechanisms |
| Mon, Sep 26 |  | DNA damage and repair |
| Wed, Sep 28 | Module 3 Discussion |  |
| Fri, Sep 30 | **4 - Meiosis & Recombination / Tom Wilson** | Meiosis and homologous recombination |
| Mon, Oct 03 |  | Illegitimate recombination |
| Wed, Oct 05 | Module 4 Discussion |  |
| Fri, Oct 07 | **Review Session for Exam 1** | **Modules 2-4** |
| **Mon, Oct 10** | **EXAM 1** | **Modules 2-4** |
| Wed, Oct 12 | **5 - Genes & Transcription /**  **Shigeki Iwase** | Genes and basal transcriptional machinery |
| Fri, Oct 14 |  | Gene promoters, enhancers and silencers |
| **Mon, Oct 17** | **FALL BREAK** |  |
| Wed, Oct 19 |  | Transcription factors and transcriptional control |
| Fri, Oct 21 | Module 5 Discussion |  |
| Mon, Oct 24 | **6 – RNA Processing & Translation / Stephanie Moon** | Splicing |
| Wed, Oct 26 |  | Polyadenylation/post-transcriptional regulation |
| Fri, Oct 28 |  | Translation |
| Mon, Oct 31 | Module 6 Discussion |  |
| Wed, Nov 02 | **7 - Transposable Elements / John Moran** | DNA transposons and LTR retrotransposons |
| Fri, Nov 04 |  | Poly(A) retrotransposons (SINEs and LINEs) |
| Mon, Nov 07 | Module 7 Discussion |  |
| Wed, Nov 09 | **Review Session for Exam 2** | **Modules 5-7** |
| Fri, Nov 11 | **EXAM 2** | **Modules 5-7** |
| **Mon, Nov 14** | **8 - Epigenetics: Chromatin / Sundeep Kalantry** | Epigenetic inheritance / DNA methylation |
| Wed, Nov 16 |  | Histone modifications |
| Fri, Nov 18 |  | Long non-coding RNAs & 3D Genome Organization |
| Mon, Nov 21 | Module 8 Discussion |  |
| Wed, Nov 23 | **THANKSGIVING BREAK** |  |
| Fri, Nov 25 | **THANKSGIVING BREAK** |  |
| **Mon, Nov 28** | **9 - Epigenetics: Small RNAs / Sundeep Kalantry** | RNA interference |
| Wed, Nov 30 |  | microRNAs and post-transcriptional silencing |
| Fri, Dec 02 | **South Lecture Hall** | piRNAs and endo-siRNAs in gene silencing |
| Mon, Dec 05 | Module 9 Discussion |  |
| Wed, Dec 07 | **Review Session for Exam 3** | **Modules 8-9** |
| Fri, Dec 09 | **EXAM 3 South Lecture Hall** | **Modules 8-9** |