Microbial Genetics and Physiology 2017 Schedule

Block I
Week 1 (1/9-1/13): Bacterial genetics (Kaplan)
  - Screens, Selections, and Inheritance
  - Genetic Analysis of the Lac Operon
  - Mapping mutations
  - Learning activity: Three factor crosses and complete Table 4 Mapping by Hfr and cotransduction

Week 2 (1/17-1/20): HOLIDAY MONDAY Bacterial cell structures (Ton-That)
  - Cell biology of bacteria and phage
  - Cytoskeleton, membrane and cell wall

Week 3 (1/23-1/27): Growth, Division and Signaling (Margolin (.75), Kaplan (.25))
  - Cell Division in Prokaryotes
  - Cell cycle regulation
  - Cell division and growth rate

Week 4 (1/30-2/3): Metabolism (Ling)
  - Central biochemical pathways
  - Respiration, fermentation, and anaerobiosis
  - Nutrient uptake

Week 5 (2/6-2/10): Fungal genetics and cell biology (Kim (.75), Van Hoof (.25))
  - Classical and reverse genetics of fungi
  - High-throughput genetic analysis in yeast
  - Mating and differentiation
  - Yeast Genetics to Human Disease: Yeast as a model eukaryote

Block II
Week 6 (2/13-2/17) Wonderful world of parasites (Li)
  - Parasite life cycle and biology
  - Genetic methods in parasites

Week 7 (2/21-2/24): Holiday Monday Bacterial gene expression (highlighted via nutrient sensing and response) (Koehler (.50), De Lay (.50))
  - General mechanisms of nutrient sensing and response
  - Catabolite repression
  - Stringent response and oxidative stress

Week 8 (2/27-3/3): Molecular machines and bacterial secretion (Christie (.50), Liu (.50))
  - General secretory pathways
  - Post-secretory protein modification
  - Intracellular compartments and protein sorting
  - Intracellular vesicular trafficking, secretion and endocytosis

Week 9 (3/6-3/10): Stress response (De Lay (.50), Morano (.50))
  - The general stress response activator: small RNAs
  - Promoting tolerance: protein folding and heat shock response

GSBS SPRING BREAK (3/13-3/17)
Week 10 (3/20-3/24): Differentiation and Multicellularity (Margolin (.75), Kaplan (.25))
  - Cell differentiation
- Sporulation
- Biofilms
- Symbiosis

Block III
Week 11 (3/27-3/31): Microbial virulence – what is it and how do we study it? (Lorenz (.50), Garsin (.50))
  - Defining and measuring virulence
  - Using model hosts to identify virulence factors
  - Genetic and genomic approaches for identifying virulence factors

Week 12 (4/3-4/7): Virulence mechanisms (Koehler)
  - Adherence and invasion
  - Toxins
  - Translocated effectors

Week 13 (4/10-4/14): Microbiome (Christie (.75), Van Hoof (.25))
  - Microbiome profiles of disease, treatment response, and environmental changes
  - Mechanisms for combatting microbial infections
  - Methods for study

MMG RETREAT WEEK (4/17-4/21, retreat is 4/20-4/21)

Week 14 (4/24-4/28): Mechanisms for combatting microbial infections (Garsin, Arias)
  - Antimicrobials and resistance
  - Vaccination

Week 15(5/1-5/5): Antimicrobial immunity (Norris)
  - Innate immunity system
  - Adaptive immunity system
  - Immune evasion

Last day of semester 5/5