	Monday June 15		Tuesday June 16		Wednesday June 17	
8:30 - 9 AM	**Coffee & danish**		**Coffee & danish**		**Coffee & danish**	
9 AM - Noon (Coffee break 10:20-10:40 AM)	**Introduction to cosmology**		**CMB overview**		**Machine learning**	
	Topics	Instructor	Topics	Instructor	Topics	Instructor
	• 0th order descriptive cosmology: FRW metric + Friedman equations • 0th order computational tools: Astropy • 1st order cosmology: Introduction to fluctuations and galaxy surveys • 1st order computational tools: CAMB	Adrian Liu (McGill)	• What is the Cosmic Microwave Background (CMB)? • CMB temperature power spectrum • CMB polarization • CMB secondaries (e.g., cluster cosmology) • Current CMB science frontiers	Matt Dobbs (McGill)	• Core principles of machine learning • Dimensional reduction techniques • Artificial Neural Networks • Convolutional Neural Networks	Laurence Perreault Levasseur (UdeM)
Noon - 1:30 PM	**Lunch**		**Lunch**		**Lunch**	
1:30 - 4:30 PM (Coffee break 3:00 - 3:20 PM)	**Overview of intensity mapping instrumentation**		**CMB data analysis techniques**		**Gravitational lensing**	
	Topics	Instructor	Topics	Instructor	Topics	Instructor
	• Basic ideas of intensity mapping • Current and future intensity mapping experiments • Technology for cosmology experiments/observatories---what are the technological differences for observations at different wavelengths?	Cynthia Chiang (McGill)	• CMB mapmaking: how do we go from time-ordered data to maps of the CMB? • MCMC parameter estimation: how do we go from CMB maps to cosmological parameters?	Jon Sievers (McGill)	• Overview of gravitational lensing: concepts and basic equations • Weak vs strong gravitational lensing • Gravitational lensing as a probe of cosmology • Machine learning and gravitational lensing	Yashar Hezaveh (UdeM)