ASTRO 430 - Cosmology
Winter 2018

To your attention: "The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at www.ualberta.ca/secretariat/appeals.htm) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offense and can result in suspension or expulsion from the University." (GFC 29 SEP 2003)

Instructor Dmitri Pogosian

Office:	Room CCIS 2-105
Office Hours:	by appointment (i.e - drop by !)
e-mail:	pogosyan@phys.ualberta.ca
WWW:	`www.ualberta.ca/~pogosyan`
Phone:	492-2150

Time and Place MWF 12.00pm - 12.50 pm, CCIS L1-047

Aim Learn main principles and discoveries of cosmology, the branch of physics which study our Universe – its properties, structure, evolution and origins. Cosmology is both old and modern science, which experienced great advances in the last thirty years.

Pre(co)requisites PHYS 310 (Thermodynamics and Kinetic Theory), MATH 334 (Introduction to Differential Equations), PHYS 458 (Relativity).

Texts Barbara Ryden: Introduction to Cosmology (2017 second edition is preferred), QB 981 R93 2017 (main text)
M. P. Hobson, G. Efstathiou and A.N. Lasenby General Relativity, Cambridge University Press, 2006, QC 173.6 H63 2006. Chapters 14,15, perhaps 16-17
John Peacock: Cosmological Physics, QB 981 P37 1999 (very good, but advanced, reference text)

Marking Scheme

Assignments:	36%
Midterm Test:	20% (date to be determined)
Final Exam:	44% (April)

Topics in the course Barbara Ryden text has a very logical structure which we shall largely follow, adding details as necessary. The course will cover the following:

- Fundamental cosmological observations.
- Dynamics of the space-time (with elements of General Relativity).
- Matter content of the Universe, Cosmological parameters. Evolution of cosmological models with different matter content. Evidence for accelerated expansion of our Universe.
- Thermal history of the Universe, Nucleosynthesis in the Early Universe. Cosmic Microwave Background Radiation as evidence for hot beginning.

- Very Early Universe. Inflationary models.
- Inhomogeneities and the Formation of Structure.
- CMB anisotropy, recent observational data and the progress in determination of cosmological parameters.

Additional texts A. Liddle and D. Lyth: Cosmological inflation and large-scale structure, QB 991 I54 L53 2000.
P.J.E. Peebles: Principles of Physical Cosmology, QB 981 P424 1993.
Steven Weinberg, The first three minutes, QB 981 W48 1979.

Grading system

Descriptior	Latter Grade	Grade Point Value
Excellent	A+	4.0
	A	4.0
	A-	3.7
Good	B+	3.3
	B	3.0
	B-	2.7
Satisfactory	C+	2.3
	C	2.0
	C-	1.7
Poor	D+	1.3
Minimal Pass	D	1.0
Failure	F	0.0