ISLA 581 F. Jamil Ragep
Scientific Traditions in Islam Fall 2019
Tuesday 14:35 – 17:25, Ferrier 476 jamil.ragep@mcgill.ca
Office Hours (Morrice Hall 024): M 14:00 – 16:00 (Tel: 514-398-4400, ext 094026)

In this course, we'll explore: the sources for science in Islam; development and transformation of scientific ideas; interaction of science and religion; transmission to other cultural traditions; and the significance of Islamic science for engaging with larger questions such as rationality within Islamic societies and religion.

Assignments:

1) [5% of grade] Coming to class each week, keeping up with the readings, and being prepared to discuss them.
2) [15% of grade] Both enrolled students and auditors will be asked to present several reports during the term based on the assigned or additional readings related to that week's topic.
3) [30% of grade] 2 short papers **(Due: Sept. 24 and Nov. 12)**
4) [15% of grade] Presentation on a particular subject in Islamic science (may be related to the term paper) **(Due: Oct. 1)**
5) [35% of grade] Term paper (approximately 10-15 double-spaced pages) on some aspect of science in Islam. The paper may be either historiographical or historical; in the latter case, you could focus on a specific author or text, or else trace an idea, discourse, or interaction over time. You will be expected to use primary source materials, either in the original language or in translation. **(Due: Dec. 10, 2019)**

Readings will be available at myCourses, as an e-book or e-article, or as printed media in the Islamic Studies Library.

SOME QUESTIONS WE WILL FOCUS ON:

1) Why would a religiously-based society embrace (or seem to embrace) non-religious knowledge, in particular knowledge that was from the "outside" and that in some cases contradicted its ostensible doctrines?

2) To what extent can we say that Islamic science is Islamic and in what sense is it universal?

3) How did the tensions related to authority (religious, political, intellectual, etc.) play out?

4) What was the nature of the hostility to "ancient" science in Islam? To what extent did it play a role in the development or hindrance of that science?

5) How did Islamic science disseminate, both geographically and generationally?

6) To what extent did Islamic science influence the development of "modern" science?

7) Why are contemporary Islamic societies and countries finding it difficult to sustain a scientific infrastructure?

SCHEDULE

Sept. 3: Setting the Stage
a) Introduction to the course
b) In Class reading: Jamil Ragep, "When did Islamic science die (and who cares)?" islamsci.mcgill.ca/Viewpoint_ragep.pdf
c) Islamic Science on the Web

Sept. 10: Introduction to Science in Islam
[mC] F. J. Ragep, "Islamic Culture and the Natural Sciences," in *The Cambridge History of Science,* eds. David Lindberg and Michael Shank, vol. 2 (Cambridge: Cambridge University Press, 2013), pp. 27-61.
[mC] A. I. Sabra, "The Appropriation and Subsequent Naturalization of Greek Science in Medieval Islam: A Preliminary Statement," *History of Science* 25 (1987): 223-43; reprinted in idem, *Optics, Astronomy and Logic: Studies in Arabic Science and Philosophy*, no. I (Aldershot, Hampshire: Variorum, 1994); and again in *Tradition, Transmission, Transformation*, eds. F. J. Ragep and S. P. Ragep (Leiden: Brill, 1996), pp. 3-27.
[mC] Franz Rosenthal, *The Classical Heritage in Islam*: *The Islamic World Series* (Routledge, 2003; orig. Berkeley, 1975), pp. 25-43.

Sept. 17: The Translation Movement
Dimitri Gutas, *Greek Thought, Arabic Culture: The Graeco-Arabic Translation Movement in Baghdad and Early ʿAbbāsid Society (2nd-4th/8th-10th Centuries)* (London; New York, 1998), pp. 1-104. https://archive.org/details/DimitriGutasGreekThoughtArabicCultureTheGraecoArabicTranslationMovementInBaghdad/page/n2
STUDENTS TURN IN TOPICS FOR OCT. 1 PRESENTATION

Sept. 24: The Translation Movement (cont'd)
George Saliba, *Islamic Science and the Making of the European Renaissance* (Cambridge, MA, 2007), pp. 1-72. https://archive.org/details/GeorgeSalibaIslamicScienceAndTheMakingOfTheEuropeanRenaissanceTransformationsStu/page/n1
PAPER: THE TRANSLATION MOVEMENT

Oct. 1: Transformation: Is there anything original in Islamic science?
F. Jamil Ragep "Islamic Reactions to Ptolemy's Imprecisions," in *Ptolemy in Perspective,* ed. A. Jones (New York, 2010), pp. 121-34. http://digitool.library.mcgill.ca/webclient/DeliveryManager?pid=108819&custom_att_2=direct
STUDENT PRESENTATIONS

Oct 8: Theories Regarding the Place of Science in Islam—Marginality vs. Naturalization [or how did scientific traditions persist for over a millennium?]
[mC] Ignaz Goldziher, "The Attitude of Orthodox Islam toward the 'Ancient Sciences,'" in *Studies on Islam*, ed. and trans. Merlin L. Swartz (New York: Oxford Univ. Press, 1981), pp. 185-215, especially pp. 195-6 (German original: "Stellung der alten islamischen Orthodoxie zu den antiken Wissenschaften," *Abhandlungen der Koniglich Preussischen Akademie der Wissenschaften* 8 [Berlin, 1916]).

[mC] David King, "Science in the Service of Religion: The Case of Islam," in *Astronomy in the Service of Islam,* by David King (1993), pp. 245-62.
[mC] Basim Musallam, *Sex and Society in Islam: Birth Control before the Nineteenth Century*: *Cambridge Studies in Islamic Civilization* (Cambridge; New York, 1983), pp. 10-59. http://name.umdl.umich.edu/HEB00923

Oct. 15: The Place of Science in Islam—Institutions and Teaching
İhsan Fazlıoğlu, "The Samarqand Mathematical-Astronomical School," *Journal for the History of Arabic Science* 14 (2008): 3-68. http://islamsci.mcgill.ca/Fazlioglu.pdf
[mC] Sally P. Ragep, "The Teaching of Theoretical Astronomy in Pre-modern Islam: Looking Beyond Individual Initiatives," in *Schüler und Meister,* eds. Andreas Speer and Thomas Jeschke (*Miscellanea Mediaevalia* 39) (Berlin: De Gruyter, 2016), pp. 557-68.
[mC] A. Sayılı, *The Observatory in Islam* (Ankara: Turkish Historical Society, 1960), pp. 306-312
[mC] François Charette, "The Locales of Islamic Astronomical Instrumentation," *History of Science* 44 (2006): 123-38.
[mC] "Bīmāristān," *Encyclopedia of Islam*, 2nd ed.
[mC] Michael W Dols, and ʿĀdil Sulaymān Jamāl. *Medieval Islamic Medicine* (Berkeley: University of California Press, 1984), pp. 24-42 ("The Medical Profession").

Oct. 22: The Foundations of Islamic Science: Philosophy, Kalām, and Mathematical Humanism
(a) Philosophical Underpinnings
Ahmad S. Dallal, *Islam, Science, and the Challenge of History*: *The Terry Lectures* (New Haven, CT: 2010), ch. 2 ("Science and Philosophy"), pp. 54-109. https://ebookcentral.proquest.com/lib/mcgill/detail.action?docID=3420994
[mC] A.I. Sabra, "Some Remarks on Al-Kindi as a Founder of Arabic Science and Philosophy" in *Dr. Mohammad Abdulhadi Abu Ridah Festschrift,* ed. A.O. Al-Omar (Kuwait, 1993), pp. 601-7.
[mC] Gerhard Endress, "Mathematics and Philosophy in Medieval Islam," in *The Enterprise of Science in Islam: New Perspectives*, eds. J.P. Hogendijk and A.I. Sabra (Cambridge, MA, 2003), pp. 121-76.
Background Reading:
Jon McGinnis, "Arabic and Islamic Natural Philosophy and Natural Science." http://plato.stanford.edu/entries/arabic-islamic-natural/

Oct. 29: The Foundations of Islamic Science: Philosophy, Kalām, and Mathematical Humanism
(b) Kalām and Science
[mC] A. I. Sabra, "Science and Philosophy in Medieval Islamic Theology," *Zeitschrift für Geschichte der Arabisch-Islamischen Wissenschaften* 9 (1994):1-42.
[mC] F. Jamil Ragep, "Freeing Astronomy from Philosophy: An Aspect of Islamic Influence on Science," *Osiris* 16 (2001): 49-71.
[mC] İhsan Fazlıoğlu, "Between Reality and Mentality: Fifteenth-Century Mathematics and Natural Philosophy Reconsidered," *Nazariyat* 1 (Nov. 2014): 1-39.

Additional Reading:
[mC] Alnoor Dhanani, "Rocks in the Heavens?! The Encounter between ʿAbd al-Ǧabbār and Ibn Sīnā," in *Before and After Avicenna: Proceedings of the First Conference of the Avicenna Study Group,* eds. David C. Reisman and Ahmed H. Al-Rahim (Leiden: Brill, 2003), pp. 127-44.

Nov. 5: Science vs. Religion?
Ahmad S. Dallal, *Islam, Science, and the Challenge of History*: *The Terry Lectures* (New Haven CT, 2010), ch. 3, pp. 110-48. https://ebookcentral.proquest.com/lib/mcgill/detail.action?docID=3420994

Averroës, *Tahafut Al-Tahafut = the Incoherence of the Incoherence*: *Unesco Collection of Great Works Arabic Series,* trans. S. van den Bergh, 2 vols. (London, 1954). [Discussion 14 and "About the Natural Sciences" and "The First Discussion" (*The denial of a logical necessity between cause and effect*)] http://www.muslimphilosophy.com/ir/tt/

[mC] Ibn Khaldun, *The Muqaddimah: An Introduction to History* (Princeton, 1967), vol. 3, pp. 246-80. [Ibn Khaldūn on astrology, alchemy and philosophy]

Nov. 12: Science vs. Religion?

[mC] Dimitri Gutas, "Avicenna and After: The Development of Paraphilosophy: A History of Science Approach," in Abdelkader Al Ghouz (ed.), "*Islamic Philosophy from the 12th to the 14th Century*, Mamluk Studies, Volume 20 (Göttingen, Germany: V&R Unipress, 2018), pp. 19-71.

PAPER: REVIEW OF GUTAS'S ARTICLE

Background: Frank Griffel, *Al-Ghazālī's Philosophical Theology* (Oxford, 2009) [esp. chs. 3-7]. See also: https://plato.stanford.edu/entries/al-ghazali/

Nov. 19: Transmission to Other Cultures

[mC] Charles Burnett, "Translation and Transmission of Greek and Islamic Science to Latin Christendom," in *The Cambridge History of Science,* edited by David Lindberg and Michael Shank, vol. 2, pp. 341-364 (Cambridge: Cambridge University Press, 2013).

Hyunhee Park, *Mapping the Chinese and Islamic Worlds: Cross-Cultural Exchange in Pre-Modern Asia* (New York: Cambridge University Press, 2012), esp. pp. 191-202. https://doi.org/10.1017/CBO9781139088329.011

Kim Plofker, *Mathematics in India* (Princeton: Princeton University Press, 2009), esp. pp. 255-278. https://muse.jhu.edu/book/31129

F. Jamil Ragep, "Copernicus and His Islamic Predecessors: Some Historical Remarks," *History of Science* 45/1 (March 2007): 65-81. http://digitool.library.mcgill.ca/webclient/DeliveryManager?pid=108813&custom_att_2=direct

Nov. 26: Science and Islam: The Modern Context

Ernest Renan, *L'islamisme et la science: conférence faite à la Sorbonne le 29 Mars 1883* (Paris, 1883); English trans. S.P. Ragep [24 pp] https://www.mcgill.ca/islamicstudies/files/islamicstudies/renan_islamism_cversion.pdf

Ahmad Dallal, *Islam, Science, and the Challenge of History*, ch. 4 (pp. 149-76) http://site.ebrary.com/lib/mcgill/detail.action?docID=10579393

[mC] Ehab Abouheif, "On Bridging Islam and Evolution through the Secret World of Ants: Struggles of a Muslim Evolutionary Biologist."

Pervez Amirali Hoodbhoy: "Islam and Science Have Parted Ways" https://www.meforum.org/2593/pervez-amirali-hoodbhoy-islam-science

Dr. Ahmad Shafaat, "A review of Pervez Hoodbhoy, *Islam and Science: Religious Orthodoxy and Battle for Rationality"* https://mm-gold.azureedge.net/Articles/hoodbhoy/book_review_islam_science.html

OUTLINE OF TERM PAPER DUE ALONG WITH SHORT PRESENTATION

DECEMBER 10, 2019: TERM PAPER DUE

Additional Course Information

1. Ragep's Office Hrs: M 14:00 – 16:00 and by appointment. [Morrice Hall 024]

2. Late submission of assignments will be permitted without penalty only in cases of serious illness or emergency (such as a death in the family); approval for late submissions must be obtained in advance in all but highly exceptional cases.

3. Otherwise, late submissions of assignments will be accepted but will be penalized a half letter-grade (or 5 points on a 100 scale) for every day they are late, up to a maximum of 50% penalty. This includes the term paper.

4. McGill is committed to providing reasonable accommodation for all students with disabilities. Students with disabilities who require accommodations in this course are requested to speak with the professor as early in the semester as possible. It would be helpful if you contact the Office for Students with Disabilities at 398-6009 (online at http://www.mcgill.ca/osd) before you do this.

5. In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded. *Conformément à la Charte des droits de l'étudiant de l'Université McGill, chaque étudiant a le droit de soumettre en français ou en anglais tout travail écrit devant être noté.*

6. McGill University recognizes and respects the diversity of its members, including diversity of religious faiths and observances. For McGill's policy for the Accommodation of Religious Holy Days, please see https://www.mcgill.ca/importantdates/holy-days-0/policy-holy-days

7. Permission from the instructor is needed for taping of Lectures.

8. Academic Integrity:
   McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see www.mcgill.ca/students/srr/honest/) for more information.

9. In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.

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Please feel free to email me with any questions or problems: jamil.ragep@mcgill.ca