George Washington University
FINA 6282 — Summer 2024
Advanced Financial Econometrics and Modeling

https://www.savickas.education/FINA6282/

Section #:	71, 70	**Professor:**	Robert Savickas, Ph.D.
CRN:	70176, 70136	**Office:**	Funger 501P
Class time:	Thu., Fri., 18:10–22:00	**Office hours:**	Thu., Fri., 17:00–18:00
Class room:	Duquès 254/254	**Phone:**	994–8936
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Description: The course introduces students to more advanced financial modeling techniques that can be used in practical applications.

Text: Recommended: *State-Space Models with Regime Switching* by Chang-Jin Kim and Charles R. Nelson, The MIT Press, 1999. Recommended: Econometric model handouts, available on the downloads area of the class website. Recommended: Handouts and online resources for learning Python, available on the downloads area of the class website.

Background: Students are expected to be familiar with basic mathematics (algebra, calculus, matrix algebra), statistics (expectations, variances, covariances, correlations, regression), and finance and economics (theory, time value of money, pricing, etc.). Additionally, prior to this course, students should have taken Python workshops, offered by the MSF program. If studens need to refresh their Python knowledge, they can refer to some of the Python materials available on the class website.

Grading: Pass/fail Final Exam: 100%.

Class portal: Please see the URL at the top of this syllabus. The portal serves as a medium for online lectures and exams and for posting of handouts, possible extensions to the lecture material, class announcements and materials, etc. Additionally, it can serve as a small online community for the class, complete with user profiles, class chat, etc. Please note: this portal is built, hosted, and maintained by R. Savickas and is not associated with the Prometheus or Blackboard.

GWU Policy on Religious Holidays: 1. Students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance. 2. Faculty should extend to these students the courtesy of absence without penalty on such occasions, including permission to make up examinations. 3. Faculty who intend to observe a religious holiday should arrange at the beginning of the semester to reschedule missed classes or to make other provisions for their course–related activities.

GWU Policy on Disability: Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Rome Hall, Suite 102, to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to gwired.gwu.edu/dss/

GWU Policy on Mental Health: The University's Mental Health Services offers 24/7 assistance and referral to address students' personal, social, career, and study skills problems. Services for students include: crisis and emergency mental health consultations confidential assessment, counseling services (individual and small group), and referrals. counselingcenter.gwu.edu/

GWU Academic Integrity Code: Academic dishonesty is defined as cheating of any kind, including misrepresenting one's own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information. For full text of the Code, see www.gwu.edu/integrity/code.html

Schedule:

July 11/12:	Sec. 71/70	Introduction. Review of key Python concepts, with a focus on the students' areas of weakness. The use of classes and inheritance in financial modeling.
July 18/19:	Sec. 71/70	The use of state–space models in financial and economic modeling. **Ch. 3**.
July 25/26:	Sec. 71/70	The use of the Kalman filter to estimate the time–varying beta model for stock returns. **Ch. 3**.
Aug. 1/2:	Sec. 71/70	Building and estimating on actual data the time–varying beta model for stock returns. **Ch. 3**.
Aug. 8/9:	Sec. 71/70	Construction and estimation of the time–varying beta model for stock returns, completed. **Ch. 3**.
Aug. 15/16:	Sec. 71/70	Final examination and subsequent lecture.