**George Washington University**
**FINA 6282 — Spring 2021**
**Advanced Financial Econometrics and Modeling**

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


**Section #:** G
**CRN:** 12816
**Class time:** Wed., 19:00–23:00
**Class room:** online

**Professor:** Robert Savickas, Ph.D.
**Office:** Funger 501P
**Office hours:** By appointment, online.
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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:** Final Exam: 100%.

**Web site:** https://www.savickas.education/FINA6282/ The web site will serve as a medium for the posting of handouts, possible extensions to the lecture material, class announcements and materials, etc.

**Schedule:**

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| Jan. 13: | Sec. G | Introduction. Review of key Python concepts, with a focus on the students' areas of weakness. The use of classes and inheritance in financial modeling. |
| Jan. 27: | Sec. G | The use of state–space models in financial and economic modeling. **Ch. 3**. |
| Feb. 3: | Sec. G | The use of the Kalman filter to estimate the time–varying beta model for stock returns. **Ch. 3**. |
| Feb. 10: | Sec. G | Building and estimating on actual data the time–varying beta model for stock returns. **Ch. 3**. |
| Feb. 17: | Sec. G | Construction and estimation of the time–varying beta model for stock returns, continued. **Ch. 3**. |
| Feb. 24: | Sec. G | Construction and estimation of the time–varying beta model for stock returns, completed. **Ch. 3**. |
| Mar. 3: | Sec. G | Final examination. |