SYLLABUS

COURSE: Modeling Global Futures

LOCATION: University of Belgrade – Faculty of Political Science, Jove Ilića 165, Belgrade

SCHEDULE: The course begins on March 28th (Saturday), 11am – 2 pm (every two weeks)

INSTRUCTOR: Dr. Keith Gehring, University of Denver

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BIO: Dr. Keith Gehring is a Teaching Associate Professor at the University of Denver's Josef Korbel School of Global and Public Affairs, currently serving at the University of Belgrade with the Faculty of Political Science as a Fulbright Scholar.

His expertise lies in the areas of political economy, technology, globalization, forecasting, and development. His research focuses on institutions supportive of knowledge economy development, particularly in information and communication technology (ICT). He is also a Faculty Affiliate with the Frederick S. Pardee Institute for International Futures, where he supports the expanded use and curricular development of the International Futures forecasting model. Additionally, he has taught courses and conducted training sessions on five continents and has over 15 years of professional experience in consulting, information technology, and financial services.

COURSE DESCRIPTION: While the future is unknowable, individual, social, and physical systems can function in relatively durable patterns, enabling the generation of long-term forecasts. Over the past several decades, theory development, data collection, and quantitative methods have all improved substantially, greatly advancing our ability to understand complex interactions within and across systems. These interactions or causal relationships not only help in understanding past outcomes but also indicate patterns of potential future trajectories under variable scenarios. Using open data sources and the International Futures (IFs) system, we can begin to understand “where we’ve been”, “where we’re headed”, and “where might we want to be”.

COURSE OBJECTIVES: This course introduces students to the histories and future possibilities of nearly every country through the analysis of historical data and the development of long-term forecasts using a range of relevant variables. We utilize the CIA World Factbook, the World Bank World Development Indicators and the International Futures (IFs) system. The latter provides:

- an archive of statistical data for 189 units (i.e., countries) across a range of relevant domains including, demography, economics, health, education, governance, infrastructure, the environment, and others,

- long-term forecasts for all available countries across most domains using established relationships yielding expected values, and
- scenario development enabling "what-if" analysis where users can modify existing values and relationships to create alternative forecasts.

CLASS REQUIREMENTS:

- A laptop running Microsoft Windows, preferably native. Other operating systems are supported only through emulation or a limited online version of IFs.
- Hughes, Barry B. 2026. Exploring and Shaping International Futures. 5th edition. Available free online.
- Hughes, Barry B. 2019. International Futures: Building and Using Global Models. Academic Press (Elsevier Ltd).
- Other readings accessible online.

Certificate Requirements: Your final grade is based on your performance on five short assignments, each following a lecture.

ASSIGNMENT POLICY: All assignments must be completed on time. Make-ups will only be granted under exceptional circumstances such as documented and verified medical or family emergencies.

ACADEMIC HONESTY: All work submitted must be your own and produced exclusively for this course. The use of sources (e.g., ideas, quotations, paraphrases) must be properly acknowledged and documented. AI misuse is prohibited.

CLASS POLICIES: Students are expected to attend, be attentive, and arrive prepared for each class. This means reading all assigned content prior to each session and contributing to class discussions.

We engage a range of politically sensitive topics using conflicting perspectives, thus all discussions will be conducted with respect and consideration for our diverse community. Distracting behavior will not be tolerated, including the use of mobile phones, ear buds, social media, messaging or any other disruptive technology yet to be invented.

We protect the intellectual property of all our faculty, and safeguard the privacy of all our students in learning environments. To this end, students may not record, reproduce, screenshot, photograph, or distribute any actions, lectures, or content from the course, whether in-person or online.

COURSE OUTLINE

1.1 Introduction and course expectations

Optional: Drezner, Dan. "Five Known Unknowns about the next Generation Global Political Economy." Brookings, Project on International Order and Strategy, May 2016.Links to an external site.

Optional: Friedman, George. "Overture." In The Next 100 Years: A Forecast for the 21st Century, Reprint edition. Anchor Books: Anchor, 2010.

Reference: Illowsky, Barbara, Susan Dean, Daniel Birmajer, Bryan Blount, Sheri Boyd, Matthew Einsohn, James Helmreich, Lynette Kenyon, Sheldon Lee, and Jeff Taub. Introductory Statistics 2e. Free Textbooks Online with No Catch. OpenStax, 2023.Links to an external site.

1.2 Getting started with International Futures (IFs)

Installing the International Futures (IFs) System. Alternatively, accessing the online version.

Hughes (2026), pp. 15-99

2.1 Population and demography

Hughes (2026), pp. 100-129

Optional: Spears, Dean. 2023. "Opinion | All of the Predictions Agree on One Thing: Humanity Peaks Soon." The New York Times, September 18, 2023, sec. Opinion.

Reference: Population Wiki

Reference: Population Guide to Scenario Analysis

How-to video: Performing Demography Analysis

How-to video: Building a Demography Scenario

2.2 Health

Hughes (2026), pp. 163-195 (focus only on health)

Reference: Health Wiki

Reference: Health Guide to Scenario Analysis

How-to video: Health Analysis and Scenario Development

3.1 Education

Hughes (2026), pp. 163-195 (focus only on education)

Reference: Education Wiki

Reference: Education Guide to Scenario Analysis

How-to video: Perform Education-based Analysis

How-to video: Building an Education-based Scenario

3.2 Economics

Hughes (2026), pp. 130-162

Reference: Economy Wiki

Reference: Economy Guide to Scenario Analysis

How-to video: Performing Economic Productivity Analysis

How-to video: Developing Economic Productivity Scenarios

4.1 Government finance

Reference: Government Finance Wiki

Reference: Government Finance Guide to Scenario Analysis

How-to video: Government Finance Analysis

How-to video: Government Finance Scenario Development

4.2 Governance, politics, and society

Hughes (2026), pp. 242-284

Reference: Governance Wiki

Reference: Governance Guide to Scenario Analysis

How-to video: Domestic Governance Analysis

How-to video: Domestic Governance Scenario Development

5.1 Food and agriculture

Hughes (2026), pp. 197-208

Reference: Agriculture Wiki

Reference: Agriculture Guide to Scenario Analysis

How-to video: Food and Agriculture Analysis

How-to video: Food and Agriculture Scenario Development

5.2 Energy and the environment

Hughes (2026), pp. 209-241

Reference: Energy Wiki

Reference: Energy Guide to Scenario Analysis

How-to video: Energy Analysis and Scenario Development

Reference: Environment Wiki

Reference: Environment Guide to Scenario Analysis

How-to video: Environment Analysis

How-to video: Environment Scenario Development

ASSIGNMENTS

1 Create a working document that sufficiently addresses all of the following:

1.1 Identify a country or region of the world and an associated issue/dynamic/etc. that interests you. NB: "region" has a couple of meanings. In this context, a region is comprised of multiple countries for some reason.

1.2 Develop a plausible, long term (2050-2100) forecast for your country/region and associated issue/dynamic/etc. Explain your reasoning.

1.3 Using IFs, investigate forecasts that confirm, challenge, or extend your forecast. Provide graphs that illustrate any of the aforementioned.

1.4 Be prepared to quickly (max two minutes) present your forecast to the class.

1.5 Good luck! Have fun!

2 Create a working document that sufficiently addresses all of the following:

2.1 Compare the relationship of two variables (IV and DV) using IFs.

2.2 Fit the best regression line to the trend and identify the associated r-squared value. If that value is less than .30 or greater than .90, seriously consider whether or not you have a meaningful relationship. Paste the regression graph, results, and associated data into a working document.

2.3 Explain the perceived causal relationship between the two variables.

2.4 Identify a theory that supports your explanation. Are there any conditions or qualifications that might limit the explanatory power of the theory? For example, is it only relevant for certain countries at certain points in time or are other variables more or less helpful in explaining the relationship.

2.5 Good luck!

3 Create a working document that sufficiently addresses all of the following:

3.1 Refer to the Guide to Scenario Analysis for information on possible multipliers and parameters you can change and the corresponding variables impacted through your intervention

3.2 Refer to the Wiki and identify the variable or variables that you are attempting to change in your proposed scenario. State which variable you intend to change and how you will change it.

3.3 Create a scenario that addresses the issue and part of the world you're interested in. Provide screenshot(s) of your scenario from the "Quick scenario analysis with tree" and explain what you did and why.

3.4 Use Flexible displays to review the changes from your scenario in relation to the base case. Choose at least three variables to forecast that include a) the variable you changed, b) a different variable you expected might change, and c) a variable you did not expect to change. Provide graphs of your scenario and the base case for all variables of interest.

3.5 Explain your findings and what you might do to make a more realistic/better forecast next time.
3.6 Good luck! Have fun!

4 Create a working document that sufficiently addresses all of the following:

4.1 Create an integrated scenario, preferably one that addresses your selected issue. What is an integrated scenario? It is a scenario that includes more than one intervention that hopefully yields a catalytic impact. Provide screenshots of each intervention from your scenario and explain what you did and why.
4.2 Consider calibrating each intervention based on what might be "reasonable" relative to comparable countries. Also try and run each intervention separately to discern its specific impact before integrating them.
4.3 Use Flexible displays to review the changes from your scenario in relation to the base case. Choose at least three variables to forecast that include a) the variable you changed, b) a different variable you expected might change, and c) a variable you did not expect to change. Explain your findings and what you might do to make a more realistic/better forecast next time.
4.4 Breathe.
4.5 Go to step 4.4.

5 Create a working document that sufficiently addresses all of the following:

5.1 Engage a fellow student.
5.2 Have them profile their challenge and proposed scenario. Be sure they identify the variables they are changing, the parameters used, and the specific changes for each parameter.
5.3 What do you like about their idea? What would you recommend they consider doing differently? How can you help them ultimately produce their best work by the end of the quarter?
5.4 Write up your summary in a one-to-two page document and share it with them.
5.5 Revise your own write-up using their feedback.