

# SA.310 (INTERNATIONAL ECONOMICS)

## Courses

### SA.310.101. Business Strategies for Global Financial Institutions. 4 Credits.

The objective of the course is for students to learn about the global financial services industry and to equip them with the content and skills necessary to obtain professional employment in financial services, industry in general, or the public sector. The course combines academic teachings with business school cases in “traditional” global financial services, as well as “Fintech”. It emphasizes three areas: Gaining fundamental knowledge of corporate business strategy; Understanding how global financial institutions execute (or fail to execute) their strategies; Developing students’ commercial skills, such as communications, presentation skills and teaming. The class is highly participatory. The work is demanding. Students are urged to review the syllabus in detail. Corporate finance or Financial Decision-Making is recommended as a prerequisite. Please contact me (jkocjan@deloitteired.com) if you have questions.

### SA.310.700. Microeconomics. 4 Credits.

A detailed summary of microeconomic theory using calculus with a focus on policy issues. Highlights the key microeconomic issues related to international economics issues. Much more rigorous, analytic and mathematical than current MA course. This course is open to enrollment by MIEF students only.

### SA.310.701. Macroeconomics. 4 Credits.

A mathematical presentation of open economy macroeconomic models of short/long term equilibrium and growth. A review of monetary/fiscal policy as well as measurement issues. More focus on models and quantifying impacts rather than just shifting of curves as with current MA course. This course is open to enrollment by MIEF students only.

### SA.310.707. International Trade. 4 Credits.

Presentation of the classic and modern models of trade between countries and the issues related to trade policy in the global economy. More detailed, analytic and mathematical than current MA course. This course is open to enrollment by MIEF students only.

### SA.310.708. Sustainable Finance and Impact Investing. 4 Credits.

This course aims to equip students to analyze sustainable finance and impact investing and become current with the range of current approaches being pursued. The class will be in seminar format and students will be expected to participate actively in class.

### SA.310.710. Development Finance. 4 Credits.

“Basically, the 19th century was the age of return (the main question being, how much will the investment bring me?), the 20th century was the age of risk-return (will the return on my investment be enough to justify the risk I take?); and the 21st century appears to be the age of risk-return-impact (how much am I risking, how much can I earn, and what is my impact?)” - Bertrand Badre, Can Finance Save the World? (2018). Bertrand wrote this in the context of the challenge facing the financial system post the 2007-2009 financial crisis; and the recognition by governments across the world that the attainment of the SDGs will only be possible with innovation in financial markets, and a massive partnership with the sources of private capital. The financial consequences of the Covid 19 pandemic are still unfolding, but it is clear that limited public resources will be stretched further. Governments, especially in developing countries, need closer collaboration with private and international capital to explore nontraditional mechanisms to finance crucial development projects. This course explores the role that Development Finance Institutions (DFIs) have today. To be effective in mobilizing capital requires that DFIs fully understand what providers of capital are looking for, and the fiduciary responsibility they have towards those whose savings they manage. The course will enable students to understand key mechanisms and instruments used by DFIs, the role of governments, private capital providers and different institutions and emerging trends in international development finance. The course will build on theoretical foundations of corporate finance and project finance to help students unpack the approaches to development financing design and structuring. The course takes a mixed approach of teaching concepts, case studies and hands-on assignments to help students build analytical skills required to launch a career in International Development Finance.

### SA.310.711. Public-Private Partnerships: Creating Public Value in Economic and Social Infrastructure. 4 Credits.

**SA.310.712. Organization and Regulation of Infrastructure. 4 Credits.** The course provides a comprehensive treatment of policy issues arising in the organization and regulation of infrastructure ranging from regulation of market structure, choices of ownership (and partnerships) and regulation of market conduct to implications for finance. Most examples are drawn from telecommunications, electricity, transport and water. A multitude of country cases (including current policy debates) from across the globe demonstrate how basic principles interact with politics to yield a plethora of institutional incarnations and insights into variants of “state capitalism” at work. MIEF students only.

### SA.310.713. Risk Analysis and Modeling. 4 Credits.

This course develops financial modeling skills through actual hands-on construction of a financial model. Each participant will build his/her own interactive financial model from scratch to practice blending accounting, finance and Excel skills. This course is open to enrollment by MIEF students only.

### SA.310.714. Game Theory. 4 Credits.

Traditional economic theory tends to avoid interactive influences among decision-makers. Game theory focuses on analyzing the effects of interaction among individuals and groups with competing and conflicting goals. The course covers cooperative and noncooperative game theory, explaining the nature and selection of pure and mixed strategies, the various equilibrium concepts used and the theory’s relationship to traditional optimization analysis. Draws examples from microeconomic theory, international trade and trade policy, arms control, international relations as well as other fields. The course is self-contained with respect to mathematics content. This course is open to enrollment by MIEF students only. Prerequisite: Microeconomics.

**SA.310.715. Labor Economics and Public Policy. 4 Credits.**

The course will introduce a range of topics in labor economics, including theories of labor supply and labor demand, labor market equilibrium, unemployment, investments in education and training, discrimination, patterns of inequality, and technological progress and inequality. After working through theory, we will discuss applications to important public policy issues including minimum wage and employment protection laws, international trade and labor markets, active labor market policies (both motivations for and performance of different strategies for helping unemployed workers find jobs), social insurance systems and their influence on the labor market, and retirement decisions and the labor market in aging economies. Applications to policy questions will provide insight into how labor supply and labor demand decisions differ across the institutional and economic contexts of lower-, middle- and upper-income economies. Taught by John Giles

**SA.310.719. International Financial Markets. 4 Credits.**

This is a survey course covering issues in international financial markets. We will cover various markets and financial instruments, including bonds and bond markets, an introduction to derivatives and structured financial products. We also cover the theory of investment, including modern portfolio theory, behavioral finance, fat-tailed distributions/Black Swans and efficient market theory. Finally, we close the course with a selective history of financial crises, which also introduce basic issues related to financial intermediation (banking and shadow banking). There is a strong emphasis on real world financial instruments, institutions and issues. There are no prerequisites, though International Monetary Theory or Accelerated International Monetary Theory will be helpful. This course is open to enrollment by MIEF students only.

**SA.310.720. Advanced International Macroeconomics. 4 Credits.**

This is an advanced course on open economy macroeconomics. The main purpose of the course is to cultivate and develop the ability to use formal theoretical models to interpret and understand the complex economic reality around us. Topics include current account determination, the relationship between saving and investment, imperfections in international capital markets, insurance mechanisms, the role of the real exchange rate, and fiscal policy. This course is open to enrollment by MIEF students only.

**Prerequisite(s):** SA.310.724[C]

**SA.310.721. Financial Derivatives and Risk Management. 4 Credits.**

Introduces options, futures and swaps presented in Corporate Finance. Reviews basics of valuation methods and institutional context in which derivative contracts are traded. Describes use of basic derivative instruments as "building blocks" to construct more complex positions that increase, decrease or transform exposure to specific financial risks. Focuses on how such combinations of derivatives may be used to implement overall risk-management strategy and introduces techniques to manage financial derivatives portfolios, including value-at-risk and credit mitigation. Uses case discussions and culminates in oral presentation of a group project. This course is open to enrollment by MIEF students only.

**SA.310.722. Financial Decision-Making. 4 Credits.**

Introduces quantitative tools and framework of financial decision-making. Examines present-value techniques, pricing of financial instruments, trade-off between risk and return, portfolio theory, capital budgeting, financial ratio analysis, behavior of financial markets, capital structure decisions, corporate cost of capital issues, option theory and risk management. Approach is rigorous and analytical, and goal is to provide students with conceptual understanding of the ideas of financial theory as well as the quantitative methods necessary to pursue careers involving financial decision-making. This course is open to enrollment by MIEF students only.

**SA.310.723. Creating Markets in Infrastructure - Electricity and Beyond.. 4 Credits.**

This applied microeconomics course lays out ways to introduce competition across all infrastructure sectors (telecom, energy, transport, water). A deep dive into electricity markets brings out the core challenges, covering: market structure regulation and market design for operations and investment in generation as well as transmission and distribution; competition policy; the integration of renewables into electricity grids and the concept of smart grids. Access pricing principles for telecommunications systems conclude with an overview of the net neutrality debate.

**Prerequisite(s):** SA.300.699[C] OR SA.300.700[C] OR SA.999.700[C] OR SA.999.699[C]

**SA.310.724. International Finance. 4 Credits.**

Inter-temporal macroeconomics models involving capital flows and determination of asset prices and equilibrium exchange rates. Examination of models of exchange rate regimes, debt sustainability, and other global macro topics. Focus on intertemporal issues and general equilibrium models is not covered in MA version of course. This course is open to enrollment by MIEF students only.

**SA.310.725. Credit Markets and Credit Risk. 4 Credits.**

Although the size of credit markets varies across countries, reflecting the level of economic development, its industrial structure and its regulatory regime, globally, credit markets are huge, surpassing by far equity markets as a source of finance for both the private and public sectors. McKinsey estimates that, in 2007, total global financial assets were \$225 trillion, of which only \$50 trillion was equity, the remainder represented various types of credit instruments. The recent Global Financial Crisis had a significant impact on credit markets, something that will be discussed repeatedly during the course. This course will examine credit markets globally, with a specific focus on understanding the particular nature of credit risk. After an overview and definitions, the mathematics of fixed income instruments will be covered. There will then follow two sections on private sector credit risk, one each for the real and banking sectors. A significant part of the course will then incorporate what has been learned in analyzing private sector credit into a discussion of sovereign credit risk. This course is open to enrollment by MIEF students only.

**Prerequisite(s):** SA.310.722[C]

**SA.310.726. The Modern Financial System: Money, Banking, and Beyond. 4 Credits.**

This course examines the role of financial institutions and money in the international economic system. The course begins with an overview of what financial institutions are and what they do. The course will then study the causes of financial crises and the impact that they have on local and global economies. Then this course will study international financial regulation and the impact of interest rate movements on banks. The class will close by studying the new area of digital assets (e.g. Bitcoin, central bank digital currencies (CBDC), stablecoins) and will discuss the potential role they may play in our financial system.

**SA.310.727. International Financial Organizations: Institutions and Analytical Methods. 4 Credits.**

While this course is about the main international financial organizations, the bulk of the course is about the International Monetary Fund (IMF), the pre-eminent global economic and financial institution. There will be two primary focuses of the course. First, we will study the international financial organizations and the international monetary system from an institutional and historical perspective. Second (and this will form the majority of the course), we will focus on the analytical methods used at the IMF to perform country macroeconomic analysis, specifically, financial programming.

**Prerequisite(s):** SA.100.304[C] OR SA.310.724[C]

**SA.310.728. Central Banking in Emerging Markets. 4 Credits.**

This course introduces students to the challenges of central banking in emerging economies while exploring its traditional as well as non-traditional role in economic management. The course topics include monetary policy and transmission mechanism, exchange rate policy, interest rate corridor, role of central bank in economic development, fiscal dominance, and financial stability. It also analyzes the implications of quantitative easing, fiscal stimulus, and austerity measures for emerging markets along with new developments like central bank digital currencies and central banking during the Covid crisis. Calculus and econometrics are desired but not necessary.

**Prerequisite(s):** SA.100.304[C] OR SA.310.724[C]

**SA.310.731. Impact Evaluation in Development. 4 Credits.**

The goal of this course is to provide students with an introduction to key methods of quantitative policy analysis and impact evaluation used to analyze policy relevant questions in developing countries. We develop the statistical toolkit of regression analysis, reviewing the bivariate regression model and then continuing with multiple regression, and explore how these methods are applied to policy analysis in five benchmark techniques: randomized trials, direct regression analysis, instrumental variables, regression discontinuity, and difference in differences. We emphasize the distinction between regression as a statistical tool and the additional context knowledge (and occasionally assumptions) that are required to address causal policy questions. We will rely on empirical microeconomic studies (mostly in developing countries) to analyze behavior under different types of market failures and to evaluate the impacts of policy interventions. Pre-requisites: Statistics, econometrics, and microeconomics. Previous knowledge of STATA will be helpful. This course is open to enrollment by MIEF students only.

**SA.310.732. Global Investment Management. 4 Credits.**

Introduces the process of analyzing, valuing, selecting and managing various financial instruments issued by companies, governments and other entities outside the United States, emphasizing issuers from emerging markets. Intended to bridge theory and practice by focusing on the proper integration of qualitative judgments about issuers and their securities based on the broader economic, political, social and cultural environments in which they operate with the quantitative models driving investment selection and portfolio management at the frontiers of finance today. This course is open to enrollment by MIEF students only. Prerequisite: Financial Decision-Making.

**SA.310.734. Quantitative Global Economics. 4 Credits.**

Focuses on issues relevant to understanding the world economy: modeling and forecasting of exchange rates, modeling the sustainability of external imbalances, determining the importance of international capital flows and implementing monetary-policy rules. Examines empirical studies in each of these areas by looking at their assumptions, weaknesses and strengths and considering whether there are alternative methods of addressing a given issue. Students learn to develop an independent opinion of how theoretical ideas are applied to policy questions by asking: How much? Does it matter? How do you know? This course is open to enrollment by MIEF students only.

**SA.310.735. Topics in Development Economics. 4 Credits.**

This is an advanced seminar-style (discussion) course that will dive deeply into a selection of active areas of research in the development economics literature. It can be thought of as a successor course to my introductory survey course Economic Development (SA.310/320/744), although that course is not strictly a prerequisite. Each week we will read 2-4 related papers on a topic where there is an ongoing debate both in the academic literature and in policy circles. Examples include the impacts of foreign aid, industrial policy, the role of culture in economic development, and the economics of urbanization in LMICs. As an advanced course, the purpose of this class is to help students develop the skills to critically engage with any literature in development economics. It is targeted to advanced masters students wanting to go deeper into the literature, doctoral students in related fields, and anyone looking to learn more about how to closely read economic research. It will be particularly useful for those considering going on to a PhD or otherwise considering a career in research, although it will also make those more interested in working in policy into better consumers of research. Prerequisites: introductory microeconomics and macroeconomics, plus at least one statistics or econometrics course. Economic Development is also recommended by not required. This course is open to enrollment by MIEF students only.

**SA.310.736. Trade and Development. 4 Credits.**

Focuses on trade policy issues in developing countries. Addresses tariff structures, quantitative trade restrictions on imports and exports, exchange controls and the design of trade reform programs. Also looks at the relationship between macroeconomic policy and other domestic policies and trade liberalization. Studies the history of developing countries at the World Trade Organization. Focuses on theoretical tools and analytical techniques rather than case studies. This course is open to enrollment by MIEF students only.

**SA.310.740. Enterprise and Development. 4 Credits.**

The course covers the major debates around “private sector development” – the interplay between markets, firms and government policy, arguably the main driver of economic development. Fundamental are institutional settings that allow co-operation to function, while allowing competition at the same time. Special topics include the role of informal market, and that of small and medium enterprises. Approaches to inclusive business models including impact investment are debated as well as the relationship between enterprise and values (corporate governance, corporate social responsibility, not-for-profit firms) including measurement approaches targeting social and environmental impact.

**SA.310.743. Advanced Topics in Trade Theory. 4 Credits.**

A rigorous seminar on international trade and commercial policy covering a broad set of policy-oriented topics. Covers both theory and applications, but emphasizes tools and analytical techniques rather than case studies. Overall goal is to develop a broad conceptual understanding of ongoing issues in international trade and familiarity with the analytical techniques used by economists in developing policy recommendations. This course is open to enrollment by MIEF students only.

**Prerequisite(s):** SA.310.707[C]

**SA.310.744. Economic Development. 4 Credits.**

This course introduces students to the study of economic development. Different disciplines have different methods – this class uses the tools of economics to examine the reasons why some places are so much more prosperous than others. Specifically, we will use mathematical modeling and econometrics to develop and test theories of economic growth, structural transformation and poverty alleviation. While the core questions in economic development could be examined anywhere in the world, we will focus on low- and middle-income countries, with some references to the historical literature in richer countries like the United States. This class is targeted at anyone considering a career in research or policymaking in developing countries, but will also provide useful skills and insights to those working on issues of poverty and growth in more developed countries as well. This course is open to enrollment by MIEF students only.

**SA.310.745. Big Data Analytics (Data Mining). 4 Credits.**

This is an applied course on big data analytics with focus on data mining. R will be the main tool for problem solving with Python as the other option. Topics will cover data visualization, exploratory analysis, association rules, classification and regression trees, deep learning (neural networks), text mining, social network analysis, etc. Prerequisites: General understanding and experience with statistical models, including multivariable regression models, analysis of variance, and test of hypotheses. No previous programming experience is required, and the textbook offers extended code that can be used directly or modified.

**Prerequisite(s):** SA.100.501[C] OR SA.310.771[C]

**SA.310.747. Behavioral Economics. 4 Credits.**

This course examines the relationship between behavioral economics, public finance and public policy. Individuals frequently make decisions that systematically depart from the predictions of standard rational actor economic models. Behavioral economics attempts to explain these departures by integrating an understanding of the psychology of human behavior into economic analysis. This course will review the major themes of behavioral economics and address their implications for public finance in a wide variety of policy-relevant domains, including: savings, consumer credit, education, labor markets, energy use, health care, revenue collection and tax compliance, social welfare programs, and the political process. The course trains students to think critically about problems and apply an understanding of behavioral economics to best address and design policy solutions that improve outcomes. This course is open to enrollment by MIEF students only.

**SA.310.748. Environmental Economics. 4 Credits.****SA.310.749. International Trade Policy. 4 Credits.**

This course is designed to familiarize students with some of the major trade policy issues that countries face today. While theory and applications will both be covered, emphasis will be placed on tools and analytical techniques rather than on case studies. Topics covered include the analysis of alternate trade policy instruments, links between trade policy, exchange rates and trade outcomes, optimal policy interventions with market failures, market structure and trade policy, trade and labor markets, the political economy of trade policy, preferential trade agreements (such as NAFTA and the European Union), the design of the world trading system and the numerous challenges it currently faces. Pre-Requisite: International Trade or International Trade Waiver Exam. This course is open to enrollment by MIEF students only.

**Prerequisite(s):** SA.310.707[C]

**SA.310.750. International Economic Policy. 4 Credits.**

This course examines macroeconomic policy in open economies. After covering the basic theoretical foundations on how monetary and fiscal policy should be conducted over the business cycle, we will analyze how such policies are actually conducted in practice and explore why. This is a hands-on course where students will be asked to gather data and perform an empirical investigation on how macroeconomic policies are carried out in their home countries. This course is open to enrollment by MIEF students only.

**Prerequisite(s):** SA.300.708[C] OR SA.310.724[C]

**SA.310.754. Cost-Benefit Analysis. 4 Credits.**

Policy decisions require difficult trade-offs of costs and benefits; there is no such thing as a free lunch. Hence, the course will use specific policy areas – including health care, transportation and infrastructure, international aid and development, education, and environmental issues – as examples to provide students with the concepts and tools of cost-benefit analysis to analyze the role of government intervention, its justification, opportunity costs, and implications for efficiency, fairness and effectiveness. The course will cover key theories and concepts that underpin most discussions of public policy on the role and financing of the government sector, including public goods (both national and global), externalities and market failure, tax policy, social welfare economics, market structure, monetary and fiscal policy. We will then place cost benefit within the broader public finance framework. Using these concepts, the course will highlight some of the challenging real-world public policy issues confronting governments in different parts of the world. Students will learn how to develop and apply cost-benefit analysis techniques to the evaluation of public policies. This course is open to enrollment by MIEF students only.

**SA.310.761. Multinational Corporate Finance. 4 Credits.**

Covers issues related to both international financial markets and financial decision-making within the international environment. Focuses on understanding and forecasting financial conditions in international markets; identifying, measuring and managing exchange-rate risk; taxation of international income; implications of political risk on project valuation; and cost of capital for international projects. Prerequisite: Financial Decision-Making. This course is open to enrollment by MIEF students only.

**Prerequisite(s):** SA.310.722[C]

**SA.310.770. Quantitative Methods I: Basic Econometrics. 4 Credits.**

This course covers the basics of econometrics, representing the first half of the econometrics sequence. Statistical concepts of confidence intervals and hypothesis testing will be reviewed in the context of simple and multiple regression analysis using the normal, t, and F distributions. Assumptions made when using regression or function fitting analysis will be examined in the context of multiple regression using matrices. Matrix algebra will be reviewed. Non-linear relationships and relationships involving qualitative variables will be covered as well as understanding the errors involved in prediction. The statistical package Stata will be used throughout this course following a brief use of Excel. Students will prepare a short paper presenting the results of a regression analysis. This course is open to enrollment by MIEF students only.

**SA.310.771. Quantitative Methods II: Econometrics. 4 Credits.**

A mathematical presentation of econometrics from OLS and the violation of the classical assumptions through advanced econometric techniques for dealing with common econometric problems. Moves faster and further than MA version of the course. Involves lab work. This course is open to enrollment by MIEF students only.

**SA.310.772. Cross-Sectional and Panel Data Econometrics: Applied Econometrics for Microeconomics. 4 Credits.**

This course is designed to teach the tools and techniques of applied statistics and empirical microeconomics. The class focus is on how the data generation process of collecting sample data from a population frame affects inference with a focus on cross-sectional and panel data. The class examples and exercises will focus on issues related to international development and domestic social issues (e.g. poverty, education, health, labor issues). The emphasis is on applications, not derivations, of methodology. The course will entail a significant amount of analysis of household survey data using primarily Stata. This course covers some of the same topics as Quantitative Methods I and II, both as a tool to reinforce the material and also to provide more applied examples of the estimation issues. This course is open to enrollment by MIEF students only.

**Prerequisite(s):** SA.100.401[C] OR SA.310.771[C] OR SA.340.710[C]

**SA.310.773. Macro and Financial Time Series Econometrics. 4 Credits.**

This course will cover time series analysis with a particular emphasis on aspects of time series analysis that are employed in the empirical analysis and modeling of financial and macroeconomic time series. The course will cover theoretical aspects of time series analysis but will focus on applied and empirical aspects of time series analysis. This course is quantitative and will build upon concepts that have already been learned in previous econometrics courses such as OLS estimation, finite sample and asymptotic properties of OLS and MLE estimators, and hypothesis testing. This course is open to enrollment by MIEF students only.

**Prerequisite(s):** SA.310.771[C] OR ( SA.310.805[C] AND ( SA.100.401[C] OR SA.340.710[C] ) )

**SA.310.774. Empirical Economic Modeling and Forecasting. 4 Credits.**

This course is an introduction to practical empirical economic modeling and forecasting. It focuses on the methodology, practice, and implementation of econometric modeling and forecasting with macroeconomic time series. The course's first part (empirical model building) considers data properties, including integration and cointegration; dynamic specification, including error correction models; and model evaluation and design, including computer-automated model selection algorithms and impulse indicator saturation. The course's second part (empirical economic forecasting) focuses on the roles of forecasting, including in policymaking; the generation and evaluation of forecasts; sources of forecast error; and robustification and improvement of forecasts. Throughout, the course includes discussion of the underlying theory, live data-based presentations of substantive empirical analyses, and hands-on learning in class. The latter two aspects help demonstrate the approach to econometric modeling and forecasting and address empirical questions as they arise. Examples with single-equation and multiple-equation models using different countries' data motivate and illustrate the concepts involved. This course is open to enrollment by only MIEF students.

**Prerequisite(s):** SA.310.771[C] OR ( SA.310.801[C] AND ( SA.100.401[C] OR SA.340.710[C] ) )

**SA.310.787. Infrastructure Finance and Modeling. 4 Credits.**

This course will use a practical and quantitative approach to understanding infrastructure finance transactions and financial modeling. The goal of the course is to provide an understanding of how the financial structure for an infrastructure transaction is determined from the underlying technical, contractual, and market conditions. Financial Decision-Making is a prerequisite for registration. A working knowledge of accounting and finance concepts and Excel is assumed and necessary.

**Prerequisite(s):** SA.310.722[C]

**SA.310.790. MIEF Applied Research Project. 2 Credits.**

Being a successful professional involves providing reliable answers to practical questions. Obtaining reliable answers benefits from two components. First, one needs a theoretical framework used to organize the data. Second, one needs a suitable statistical method to summarize the implications and properties of the data to develop an intelligible answer to the question at hand. Unfortunately, there is no "cookbook" available that could turn an amateur into a successful professional. Hence this course prepares students to develop the habit of asking the two important questions for professional life: How do you know and what is the alternative? A successful applied research project integrates these two questions into providing reliable answers.

**SA.310.806. MIEF Skills Workshop: Stata. 1 Credit.**

This workshop will introduce Stata and illustrate how to use the software for practical applications, with attention to manual coding. We will cover basic applications - such as simple OLS regressions and charting - as well as binary dependent variable modelling, time-series features, and panel data techniques. The theoretical concepts underpinning empirical analyses will also be reviewed. These workshops are for MIEF students only.

**SA.310.807. MIEF Skills Workshop: R. 1 Credit.**

This workshop provides an introduction to analyzing data using the statistical programming language, R. It covers the fundamentals of the language, along with the essentials of data ingestion, cleaning, manipulation, and visualization. R is an open-source software environment for statistical computing and graphics used by many economists, governments, and private-sector firms (especially consulting firms). Before coming to the workshop, students should have R installed on their laptops. See the syllabus for instructions on how to install R. <https://www.r-project.org> These workshops are for MIEF students only.

**SA.310.811. MIEF Workshop: Introduction to Python. 1 Credit.**

This workshop provides an introduction to the Python programming language with a particular emphasis on analyzing data in Python. Python is an open-source, general purpose programming language used widely across a number of industries and is arguably one of the most popular programming languages in the world today. This workshop will cover environment setup, Python fundamentals, and the foundations of data analysis using the popular pandas and numpy libraries. Open to MIEF students only.

**SA.310.815. MIEF Skills: R Programming for Sustainable Finance. 1 Credit.**

The aim of this course is to provide students with a set of quantitative tools and reasoning abilities that mirror those used by professional financial analysts, portfolio managers, and policymakers. While many of these skills will be universally applicable, this course grounds them in the application of addressing issues of sustainable finance. Asset managers report that USD 25 trillion of assets implemented Environmental, Social, and Governance (ESG) integration in 2020, up 143% from 2016. The soaring popularity of investing in ESG owes much to its advocates' claims that it helps the end-investor with two challenges. First, climate change and related long-term societal risks increasingly have the potential to affect financial markets, especially over longer investment horizons. Asset owners want to ensure that their asset managers are properly considering these long-term risks. Second, end-investors want to align their investments with their values, especially around the achievement of the Paris Climate Agreement Goals and the United Nations' Sustainable Development Goals (SDGs). This course aims to provide students with the knowledge needed to become a practitioner in the space of sustainable finance and will provide an understanding of the financial system, who the key parties are, and what sustainable financing options are available to market participants, especially across emerging markets. Further, this course will aim to test whether claims about sustainable finance, SDGs, and ESG standards are supported by empirical data.

**Prerequisite(s):** SA.310.807[C] AND ( SA.310.722[C] OR SA.310.761[C] )

**SA.310.834. Project Finance. 4 Credits.**

Provides a practical and quantitative approach to understanding project finance transactions. Focuses on energy transactions in emerging markets. Integrates principles of corporate finance with an understanding of specific technologies, industrial organization, regulatory framework and country-specific policies. Examines foreign exchange issues, taxation, risk evaluation and mitigation and key contractual structures. Discusses typical loan structures and inter-creditor issues. Goal is to understand how the financial structure for a project finance transaction is analytically determined. Students build and apply detailed quantitative financial models. Prerequisite: Financial Decision Making.

**Prerequisite(s):** SA.310.722[C]; Students may not register for this class if they have already received credit for SA.310.787[C]

**SA.310.995. MIEF Capstone Course and Project. 4 Credits.**

The capstone course will consist of small groups of students working on a practical project or a current policy issue in their area of interest. The students will delve deeply into the project using the tools they have acquired and prepare a detailed presentation to be made to the class, faculty, as well as outside professionals. Topics may include the following: current account sustainability, exchange rate exposure, investment case study, studies on financial markets, and growth and debt sustainability studies. This course is open to enrollment by MIEF students only.