REAL ESTATE (REAL)

REAL 204 Real Estate Law
This course examines the fundamentals of real estate finance and development from a legal and managerial perspective. The course serves as a foundation course for real estate majors and provides an introduction to real estate for other students. It attempts to develop skills in using legal concepts in a real estate transactional setting. The course will be of interest to students contemplating careers in accounting, real estate development, real estate finance, city planning, or banking. The main topics covered may include the following: land acquisition, finance; choice of entity; tax aspects; management (leasing, environmental); disposition of real property (sale of mortgaged property, foreclosures, wraparound mortgages, sale-leasebacks); and recent legal developments. Lectures and class discussion required.
One-term course offered either term
Also Offered As: LGST 204, LGST 804, REAL 804
Activity: Lecture
1.0 Course Unit

REAL 205 Global Real Estate: Risk, Politics and Culture
This is an introductory course to global real estate markets, with a focus on income-producing real estate assets. Globally, estimates suggest the value of investable real estate assets in the world exceeds $60 trillion. We will discuss the basics of valuation and risk management, emphasizing concepts that are salient in the global context, including political risk, currency risk, property rights and culture. The course will cover markets outside the United States, except for one special topic on international investors in the United States. We will focus more on the qualitative aspects of real estate investment analysis and less on quantitative aspects. As firms expand their ventures across borders, there is a growing emphasis on the ability to assess and manage risk in a global business environment. Many of these decisions have implications on real estate assets. In this class, we will discuss the real estate business decisions of global firms, such as Blackstone, Hilton, AirBNB, WeWork, Prologis, Walmart and Amazon. This is a full semester course, open to undergraduates and MBA’s. Lecture with discussion required.
Taught by: Maisy Wong
Course usually offered in fall term
Also Offered As: REAL 705
Activity: Lecture
1.0 Course Unit

REAL 208 Housing Markets
This course is designed for students interested in the economics and operations of housing markets. It is primarily a U.S. focused course, but does include a limited amount of international material for comparative purposes. The class is divided into four sections: (1) supply and demand for housing, including the operations of homebuilders and rental landlords; (2) house prices, including cycles and price dynamics; (3) international comparisons; and (4) public policy analysis applied to a current housing markets-related issue. This course presumes knowledge of intermediate economics, as we will apply that knowledge throughout the semester. For Wharton students, this means you must have passed BEPP 250 (undergrads) or MGEC 611 and 612 for MBA’s. Non-Wharton students should have taken the equivalent course in the College. Lecture with discussion required.
Taught by: Gyourko
Course usually offered in spring term
Also Offered As: BEPP 208, BEPP 708, REAL 708
Prerequisite: BEPP 250
Activity: Lecture
1.0 Course Unit

REAL 209 Real Estate Investment: Analysis and Financing
This course provides an introduction to real estate with a focus on investment and financing issues. Project evaluation, financing strategies, investment decision making and real estate capital markets are covered. No prior knowledge of the industry is required, but students are expected to rapidly acquire a working knowledge of real estate markets. Classes are conducted in a standard lecture format with discussion required. The course contains cases that help students evaluate the impact of more complex financing and capital markets tools used in real estate. There are case studies and two midterms, (depending on instructor).
Taught by: Calder-Wang, Ferreira, Handbury, Harari, Keys, Sinai, Wong
One-term course offered either term
Also Offered As: FNCE 209, FNCE 721, REAL 721
Prerequisite: FNCE 100
Activity: Lecture
1.0 Course Unit

REAL 215 Urban Real Estate Economics
Urban Real Estate Economics uses economic concepts to analyze real estate markets, values, and trends. The course focuses on market dynamics in the U.S. and internationally, with an emphasis on how urban growth and local and federal government policies impact urban development and real estate pricing. A group development project gives hands on experience, and invited guest speakers bring industry knowledge. Besides the group project and presentation, problem sets are required along with a midterm and optional second exam. Lecture with discussion required.
Taught by: Wachter
One-term course offered either term
Also Offered As: REAL 724, REAL 945
Activity: Lecture
1.0 Course Unit
REAL 236 International Housing Comparisons
This course analyzes housing finance systems and housing market outcomes across the globe. In the US, the course focuses on the development of securitization markets and addresses the current challenges of housing finance reform, including the future of Fannie Mae and Freddie Mac. Internationally, the course covers issues of access to housing and housing informality in developing countries, financial crises arising out of the housing sector, and market-oriented and public policy solutions. The course features a wide array of speakers in finance, government and academia who contribute their perspectives to pressing issues of mortgage market design.
Taught by: Wachter
Course usually offered in spring term
Also Offered As: BEPP 236, FNCE 236
Activity: Lecture
1.0 Course Unit

REAL 240 Advanced Real Estate Investment and Analysis
This course is designed for majors in Real Estate, but is also open to finance-oriented students who wish a deeper analysis of real estate investment and investment analysis issues than that offered in REAL 209. The class will contain a mixture of lectures, guest speakers and case discussions. Academic research is paired with recent industry analysis of key issues in order to marry sound theory and empirical results with current events and practices. Several classes will include lectures outlining what economics and finance tell us about a number of topics. Generally, these will be followed by guest lectures from industry professionals who will focus on a specific application of the principles introduced in the lectures.
Taught by: Sinai
Course usually offered in spring term
Also Offered As: REAL 840
Prerequisite: REAL 209 OR FNCE 209
Activity: Lecture
1.0 Course Unit

REAL 321 Real Estate Development
This course evaluates "ground-up" development as well as re-hab, re-development, and acquisition investments. We examine raw and developed land and the similarities and differences of traditional real estate product types including office, R & D, retail, warehouses, single family and multi-family residential, mixed use, and land as well as "specialty" uses like golf courses, assisted living, and fractional share ownership. Emphasis is on concise analysis and decision making. We discuss the development process with topics including market analysis, site acquisition, due diligence, zoning, entitlements, approvals, site planning, building design, construction, financing, leasing, and ongoing management and disposition. Special topics like workouts and running a development company are also discussed. Course lessons apply to all markets but the class discusses U.S. markets only. Throughout the course, we focus on risk management and leadership issues. Numerous guest lecturers who are leaders in the real estate industry participate in the learning process. Format: predominately case analysis and discussion, some lectures, project visits.
Taught by: Alan Feldman
One-term course offered either term
Also Offered As: ARCH 768, REAL 821
Prerequisite: REAL 209 OR FNCE 209
Activity: Lecture
1.0 Course Unit

REAL 375 Real Estate Disruptions
Real Estate is changing dramatically for the first time in perhaps one hundred years. This class will examine how technology is changing in many facets (all) of the industry. This course will address how technology has already changed the demand for real estate, how it will likely change in the future the way real estate is used, designed, developed, constructed, managed, leased, maintained and financed. Among many questions to be considered: Can you crowd fund real estate development? Will the office business become a part of hospitality? Can we build new buildings like we assemble legos? How will autonomous vehicles affect the demand for space and property values? What is the future of new data analytics services? This is a team taught mini, half-credit course that will bring together a recognized industry leader and Wharton faculty. Includes a broad set of guest lecturers (Start-up entrepreneurs, incumbents, non RE technology specialists, etc). We believe there is no one single approach to gain insight into disruptions and change under uncertainty so we will propose a mix of approaches including, in-depth case-studies, interactions with guest lecturers who handle those issues daily, learning from economic history and other industries, and drawing from core economic concepts.
Taught by: Duranton/Mack
Course usually offered in fall term
Also Offered As: REAL 875
Activity: Lecture
0.5 Course Units
REAL 390 International Real Estate Comparisons
As a truly non-U.S. focused course, we explore the world of cross-border real estate development, with a focus on fast-growing emerging market economies. Topics will emphasize the importance of strategy and implementation in cross-border real estate investment and include: the rationale, opportunities and risks of international real estate investing; the macro factors that influence the performance of real estate markets across countries; market-specific factors that impact RE investment performance (property rights, taxes, transparency, planning procedures); the qualitative aspects of identifying and achieving successful projects; and the growing market for international RE securities and strategies for portfolio management. Classes will combine a lecture on specific aspects of global cross-border RE in the first half of the class and international case presentations in the second half. Cases will be presented by leading executives in charge of major international RE projects or funds. Cases have been selected to cover different types of RE development-residential, office, retail, hospitality and logistics-important emerging market countries/continents (East/South Asia, Latin America, Sub-Saharan Africa, the Middle East) and different development and investment strategies. This class is offered in the second half of the semester.
Course usually offered in fall term
Also Offered As: REAL 890
Prerequisite: REAL 209 OR FNCE 209
Activity: Seminar
0.5 Course Units

REAL 396 Real Estate Entrepreneurship
This half-semester course will focus on entrepreneurial aspects of the real estate investment business. The course structure is designed to track the life cycle of real estate investing with different units focusing on discrete stages of the deal process from sourcing and capital raising through asset management and property disposition. At each juncture, granular attention will be paid to real-life deal making skills, all from the perspective of an entrepreneur operating with limited resources in different economic environments. As part of the class, you will analyze deals, models and investment documentation that, once assembled, will arm you with a “deal tool kit” that you can reference as you engage in real estate transactions throughout your career. At the end of the course, time will be allocated to discuss the trajectory of entrepreneurship and how it corresponds to careers in the real estate business.
Taught by: Ari Shalam
One-term course offered either term
Also Offered As: REAL 891
Prerequisite: FNCE 100
Activity: Lecture
0.5 Course Units

REAL 399 Independent Study
All independent studies must be arranged and approved by a Real Estate department faculty member.
One-term course offered either term
Activity: Independent Study
1.0 Course Unit

REAL 705 Global Real Estate: Risk, Politics and Culture
This is an introductory course to global real estate markets, with a focus on income-producing real estate assets. Globally, estimates suggest the value of investable real estate assets in the world exceeds $60 trillion. We will discuss the basics of valuation and risk management, emphasizing concepts that are salient in the global context, including political risk, currency risk, property rights, and culture. The course will cover markets outside the United States, except for one special topic on international investors in the United States. We will focus more on the qualitative aspects of real estate investment analysis and less on the quantitative aspects. As firms expand their ventures across borders, there is a growing emphasis on the ability to assess and manage risk in a global business environment. Many of these decisions have implications on real estate assets. In this class, we will discuss the real estate business decisions of global firms, such as Blackstone, Hilton, AirBNB, WeWork, Prologis, Walmart and Amazon. This is a full semester course, open to undergraduates and MBA’s. Lecture with discussion required.
Taught by: Maisy Wong
Course usually offered in fall term
Also Offered As: REAL 205
Activity: Lecture
1.0 Course Unit

REAL 708 Housing Markets
This course is designed for students interested in the economics and operations of housing markets. It is primarily a U.S. focused course, but does include a limited amount of international material for comparative purposes. The class is divided into four sections: (1) supply and demand for housing, including the operations of homebuilders and rental landlords; (2) house prices, including cycles and price dynamics; (3) international comparisons; and (4) public policy analysis applied to a current housing markets-related issue. This course presumes knowledge of intermediate economics, as we will apply that knowledge throughout the semester. For Wharton students, this means you must have passed BEPP 250 (undergrads) or MGEC 611 and 612 for MBA’s. Non-Wharton students should have taken the equivalent course in the College. Lecture with discussion required.
Taught by: Gyourko
Course usually offered in spring term
Also Offered As: BEPP 208, BEPP 708, REAL 208
Prerequisite: MGEC 611 AND MGEC 612
Activity: Lecture
1.0 Course Unit

REAL 721 Real Estate Investment: Analysis and Financing
This course provides an introduction to real estate with a focus on investment and financing issues. Project evaluation, financing strategies, investment decision making and capital markets are covered. No prior knowledge of the industry is required, but students are expected to rapidly acquire a working knowledge of real estate markets. Classes are conducted in a standard lecture format with discussion required. The course contains cases that help students evaluate the impact of more complex financing and capital markets tools used in real estate. Lecture with discussion required.
Taught by: Ferreira, Handbury, Harari, Keys, Sinai, Wong
One-term course offered either term
Also Offered As: FNCE 209, FNCE 721, REAL 209
Prerequisite: FNCE 611
Activity: Lecture
1.0 Course Unit
REAL 723 Introduction to Real Estate
The goal of this class is to help students become informed consumers of real estate advice. The class material breaks down into four major sections: 1) The financial risk and return of property level real estate investments. Be able to interpret, understand and evaluate a real estate property investment pro forma. 2) The legal landscape for investing in real estate and using legal structures to manage risk. 3) The economics of commercial real estate markets. Understanding the forces that will determine the value and income-producing potential of a real estate investment. 4) Important real estate issues of the day.
Taught by: Fernando Ferreira
One-term course offered either term
Activity: Lecture
0.5 Course Units

REAL 724 Urban Real Estate Economics
Urban Real Estate Economics uses economic concepts to analyze real estate markets, values, and trends. The course focuses on market dynamics in the U.S. and internationally, with an emphasis on how urban growth and local and federal government policies impact urban development and real estate pricing. A group development project gives hands on experience, and invited guest speakers bring industry knowledge. Besides the group project and presentation, problem sets are required along with a midterm and optional second exam. Lecture with discussion required.
Taught by: Wachter
One-term course offered either term
Also Offered As: REAL 215, REAL 945
Prerequisite: MGEC 611 AND MGEC 612
Activity: Lecture
1.0 Course Unit

REAL 730 Urban Fiscal Policy
This course will examine the provision of public services for firms and people through cities. Why cities exist, when fiscal policy fails, investments in infrastructure, realities of local governments such as inequality, crime, corruption, high cost of living, congestion, and unfunded pensions and debt, will be covered. We will pay special attention to recent topics, such as partnerships with the private sector, enterprise zones, the role of technology, environmental challenges, and real estate policies that promote housing affordability, such as rent control and inclusionary zoning.
Taught by: Fernando Ferreira
Course usually offered in fall term
Also Offered As: BEPP 773, FNCE 730
Activity: Lecture
1.0 Course Unit

REAL 721 Urban Real Estate Development
This course evaluates “ground-up” development as well as re-hab, re-development, and acquisition investments. We examine raw and developed land and the similarities and differences of traditional real estate product types including office, R & D, retail, warehouses, single family and multi-family residential, mixed use, and land as well as “specialty” uses like golf courses, assisted living, and fractional share ownership. Emphasis is on concise analysis and decision making. We discuss the development process with topics including market analysis, site acquisition, due diligence, zoning, entitlements, approvals, site planning, building design, construction, financing, leasing, and ongoing management and disposition. Special topics like workouts and running a development company are also discussed. Course lessons apply to all markets but the class discusses U.S. markets only. Throughout the course, we focus on risk management and leadership issues. Numerous guest lecturers who are leaders in the real estate industry participate in the learning process. Format: predominately case analysis and discussion, some lectures, project visits.
Taught by: Alan Feldman
One-term course offered either term
Also Offered As: ARCH 768, REAL 321
Prerequisite: REAL 721 OR FNCE 721
Activity: Lecture
1.0 Course Unit

REAL 821 Real Estate Development
This course evaluates “ground-up” development as well as re-hab, re-development, and acquisition investments. We examine raw and developed land and the similarities and differences of traditional real estate product types including office, R & D, retail, warehouses, single family and multi-family residential, mixed use, and land as well as “specialty” uses like golf courses, assisted living, and fractional share ownership. Emphasis is on concise analysis and decision making. We discuss the development process with topics including market analysis, site acquisition, due diligence, zoning, entitlements, approvals, site planning, building design, construction, financing, leasing, and ongoing management and disposition. Special topics like workouts and running a development company are also discussed. Course lessons apply to all markets but the class discusses U.S. markets only. Throughout the course, we focus on risk management and leadership issues. Numerous guest lecturers who are leaders in the real estate industry participate in the learning process. Format: predominately case analysis and discussion, some lectures, project visits.
Taught by: Alan Feldman
One-term course offered either term
Also Offered As: ARCH 768, REAL 321
Prerequisite: REAL 721 OR FNCE 721
Activity: Lecture
1.0 Course Unit

REAL 804 Real Estate Law
This course examines the fundamentals of real estate finance and development from a legal and managerial perspective. The course serves as a foundation course for real estate majors and provides an introduction to real estate for other students. It attempts to develop skills in using legal concepts in a real estate transactional setting. The course will be of interest to students contemplating careers in accounting, real estate development, real estate finance, city planning, or banking. The main topics covered may include the following: land acquisition, finance; choice of entity; tax aspects; management (leasing, environmental); disposition of real property (sale of mortgaged property, foreclosures, wraparound mortgages, sale-leasebacks); and recent legal developments. Lectures and class discussion required.
One-term course offered either term
Also Offered As: LGST 204, LGST 804, REAL 204
Activity: Lecture
1.0 Course Unit

REAL 836 International Housing Comparisons
This course analyzes housing finance systems and housing market outcomes across the globe. In the US, the course focuses on the development of securitization markets and addresses the current challenges of housing finance reform, including the future of Fannie Mae and Freddie Mac. Internationally, the course covers issues of access to housing and housing informality in developing countries, financial crises arising out of the housing sector, and market-oriented and public policy solutions. The course features a wide array of speakers in finance, government and academia who contribute their perspectives to pressing issues of mortgage market design.
Taught by: Susan Wachter
Course usually offered in spring term
Also Offered As: BEPP 236, BEPP 836, REAL 236
Prerequisite: FNCE 613
Activity: Lecture
1.0 Course Unit
REAL 840 Advanced Real Estate Investment and Analysis
This course, designed for majors in Real Estate, but also open to finance-oriented students who wish a deeper analysis of real estate investment and investment analysis issues than that offered in REAL/FNCE 721. The class will contain a mixture of lectures, guest speakers, and case discussions. Academic research is paired with recent industry analysis of key issues in order to marry sound theory and empirical results with current events and practices. Several classes will include lectures outlining what economics and finance tell us about a number of topics. Generally, these will be followed by guest lectures from industry professionals who will focus on a specific application of the principles introduced in the lectures. Format: Lecture, industry speakers. Taught by: Sinai
Course usually offered in spring term
Also Offered As: REAL 240
Prerequisite: REAL 721 OR FNCE 721
Activity: Lecture
1.0 Course Unit

REAL 875 Real Estate Disruptions
Real Estate is changing dramatically for the first time in perhaps one hundred years. This class will examine how technology is changing in many facets (all) of the industry. This course will address how technology has already changed the demand for real estate, how it will likely change in the future the way real estate is used, designed, developed, constructed, managed, leased, maintained, and financed. Among many questions to be considered: Can you crowd fund real estate development? Will the office business become a part of hospitality? Can we build new buildings like we assemble legos? How will autonomous vehicles affect the demand for space and property values? What is the future of new data analytics services? This is a team taught mini, half-credit course that will bring together a recognized industry leader and Wharton faculty. Included will be a broad set of guest lecturers (Start-up entrepreneurs, incumbents, VCs, non RE technology specialists, etc.). We believe there is no one single approach to gain insight into disruptions and change under uncertainty so we will propose a mix of approaches including, in-depth case-studies, interactions with guest lecturers who handle those issues daily, learning from economic history and other industries, and drawing from core economic concepts. Taught by: Duranton/Mack
Course usually offered in fall term
Also Offered As: REAL 375
Activity: Lecture
0.5 Course Units

REAL 890 International Real Estate Comparisons
As a truly non-U.S. focused course, we explore the world of cross-border real estate development, with a focus on fast growing emerging market economies. Topics will emphasize the importance of strategy and implementation in cross-border real estate investment and include: the rationale, opportunities and risks of international real estate investing; the macro factors that influence the performance of real estate markets across countries; market specific factors that impact RE investment performance (property rights, taxes, transparency, planning procedures); the qualitative aspects of identifying and achieving successful projects; and the growing market for international RE securities and strategies for portfolio management. Classes will combine a lecture on specific aspects of global cross-border RE in the first half of the course and international case presentations in the second half. Cases will be presented by leading executives in charge of major international RE projects or funds. Cases have been selected to cover different types of RE development, residential, office, retail, hospitality and logistics – important emerging market countries/continents (East/South Asia, Latin America, Sub-Saharan Africa, the Middle East) and different development and investment strategies. Prerequisite: This class is offered in the second half of the semester.
Course usually offered in fall term
Also Offered As: REAL 390
Prerequisite: REAL 721 OR FNCE 721
Activity: Seminar
0.5 Course Units

REAL 891 Real Estate Entrepreneurship
This half-semester course will focus on entrepreneurial aspects of the real estate investment business. The course structure is designed to track the life cycle of real estate investing with different units focusing on discrete stages of the deal process from sourcing and capital raising through asset management and property disposition. At each juncture, granular attention will be paid to real-life deal making skills, all from the perspective of an entrepreneur operating with limited resources in different economic environments. As part of the class, you will analyze deals, models and investment documentation that, once assembled, will arm you with a "deal tool kit" that you can reference as you engage in real estate investment and include: the qualitative aspects of identifying and achieving successful projects; the macro factors that influence the performance of real estate markets across countries; market specific factors that impact RE investment performance (property rights, taxes, transparency, planning procedures); and the growing market for international RE securities and strategies for portfolio management. Classes will combine a lecture on specific aspects of global cross-border RE in the first half of the class and international case presentations in the second half. Cases will be presented by leading executives in charge of major international RE projects or funds. Cases have been selected to cover different types of RE development, residential, office, retail, hospitality and logistics – important emerging market countries/continents (East/South Asia, Latin America, Sub-Saharan Africa, the Middle East) and different development and investment strategies. Prerequisite: This class is offered in the second half of the semester.
Course usually offered in fall term
Also Offered As: REAL 390
Prerequisite: REAL 721 OR FNCE 721
Activity: Seminar
0.5 Course Units

REAL 899 Independent Study
All independent studies must be arranged and approved by a Real Estate Department faculty member.
One-term course offered either term
Activity: Independent Study
1.0 Course Unit
REAL 945 Urban Real Estate Economics
Urban Real Estate Economics uses economic concepts to analyze real estate markets, values, and trends. The course focuses on market dynamics in the U.S. and internationally, with an emphasis on how urban growth and local and federal government policies impact urban development and real estate pricing. A group development project gives hands-on experience, and invited guest speakers bring industry knowledge. Besides the group project and presentation, problem sets are required along with a midterm and optional second exam. Lecture with discussion required. All PhD students will be expected to complete a research paper in addition to the successful completion of the course examination requirements.
Taught by: WACHTER
One-term course offered either term
Also Offered As: REAL 215, REAL 724
Prerequisite: MGEC 611 AND MGEC 612
Activity: Lecture
1.0 Course Unit

REAL 946 Advanced Topics in Urban Economics
This course addresses advanced topics in urban and real estate economics. The course will mix theory and empirics and will cover a broad range of topics including the modeling and estimation of agglomeration economies, land use and urban costs, transportation in cities, urban growth, migration between cities, etc. The classes will mix formal presentations made by the instructor and student-led discussions of recent academic papers. In addition to presentations, students will be expected to complete a series of assignments including a short original research paper. PhD students will be expected to complete a research paper in addition to the successful completion of the course examination requirements. Prerequisites: The course assumes that students have familiarity with standard first-year econometrics and microeconomics.
Taught by: FERREIRA, DURANTON
One-term course offered either term
Activity: Lecture
1.0 Course Unit

REAL 947 Advanced Real Estate and Urban Economics
This course covers fundamental and cutting-edge topics in urban economics and real estate as well as the most important econometric issues that arise in the estimation of urban economics and real estate models. The first part of the course focuses on the application of modern econometric methods to analyze empirical questions in the broad urban economics field, which includes topics from public economics and local finances, such as household sorting and valuation of public goods. This part of the course is especially concerned about dealing with non-experimental data, and also provides a guide for tools that are useful for applied research. The second and third parts of the course examine the economic modeling and intuition of a range of topics in urban economics and real estate, such as spacial equilibrium, supply and demand of space, housing prices and cycles. In addition, special emphasis is given to how the understanding of economic theory and institutions can help any empirical analysis. At the end of the course students should have a firm grasp of theory and econometric tools that lead to convincing empirical applications. Prerequisite: All Ph.D. students will be expected to complete a research paper in addition to the successful completion of the course examination requirements.
Taught by: Ferreira
One-term course offered either term
Activity: Lecture
1.0 Course Unit

REAL 962 Applied Economics Seminar
The goal of this course is to help doctoral students develop critical thinking skills through both seminar participation and writing of referee reports. To this end students will attend the Wharton Applied Economics each Wednesday at noon seminar when it meets; prepare two written referee reports on WAE papers per semester, due before the seminar is presented. After attending the seminar and the ensuing discussion of the paper, students will prepare follow-up evaluations of their referee report, due one week after the seminar.
Taught by: Gilles Duranton
Two terms. student may enter either term.
Also Offered As: BEPP 962
Activity: Seminar
0.5 Course Units

REAL 995 Dissertation
One-term course offered either term
Activity: Dissertation
1.0 Course Unit

REAL 999 Independent Study
One-term course offered either term
Activity: Independent Study
1.0 Course Unit