Universidad del Desarrollo
Universidad de Excelencia

SYLLABUS

MACROECONOMICS

Economics and Business Department's Mission

Contribute to economic and social development through the generation and dissemination of advanced knowledge and the training of professionals of excellence in the field of management and economics, who are distinguished by their entrepreneurial capacity, global mindset, innovative attitude and who are capable to become protagonists in generating value and impact in organizations.

A. Antecedentes Generales

1. Academic Unit	FACULTAD DE ECONOMÍA Y NEGOCIOS					
2. Major	INGENIERÍA COMERCIAL					
3. Code	ECE227					
4. Ubicación en la malla	II año, II semestre					
5. Credits	10					
6. Type of subject	Mandatory	x	Elective		Optional	
7. Durration	Bimonthly		Semi-Annual	x	Annual	
8. Weekly modules	Theoretical	68	Practical	0	T.A.	34
9. Academic hours	Clases	2	Teaching Assistance		1	
10. Pre-requisites	Principios de Macroeconomía					

B. Contribution to the Graduate's Profile

The Ingeniero Comercial of the Universidad del Desarrollo is a professional who is trained in the field of administration and capable of not only understanding the evolution of the national and global economy but is also capable of successfully performing functions in management and business creation. This professional is characterized by his or her entrepreneurial capacity, leadership and teamwork, committed to the development of the country, acting with virtue in their academic and professional work, and prepared to face the commercial world.

C. General Learning Objective of the subject.

This course unfolds the contents of *Principles of Macroeconomics* in terms of both, coverage and deepness in some of the topics therein addressed. The main purpose of this course is to provide the students with theoretical tools which enables their understanding of the aggregate behavior of an economy, at an intermediate level. The application of simple macroeconomic models to predict changes in aggregate behavior

triggered by alterations in monetary, fiscal and exchange rate policies - as well as by other exogenous variables - is particularly stressed. The latter is the subject matter of macroeconomic analysis, which es emphasized here.

Learning objectives: The student is expected to deeply understand the following subjects:
1.- Some methodological issues and core concepts relevant for macroeconomic modeling. Among them, the following outstand: a) the role of *assumptions* in economic modeling; b) the rationale for using the notion of *equilibrium* in economic analysis; c) the crucial distinction between *flows* and *stocks*, as well as endogenous vis-a vis exogenous variables; d) the widely used (albeit not quite understood by students) analytical device of *parameterization* in functions with several explanatory variables, for graphical representations in two dimensional diagrams.
2.-The actual definitions and empirical measurements of several macroeconomic flow and stock variables, as well as some key macroeconomic identities.
3.-The main determinants of an economy´s inflation rate trend and its temporary deviations.
4.-The determinants of the short run behavior of GDP and other interrelated macroeconomic variables in both, a closed and an open economy. The impacts of monetary and fiscal policies in such a behavior, as well as the implications of the balance of payments adjustment mechanism under fixed and flexible exchange rate systems.
5.- The determinants of the economy´s potential output and its growth rate.

D. Units, Content and Learning Outcomes

Units and Content	Learning objectives (most learning goals are phrased in terms of questions)
INTRODUCTION. Methodology and core concepts in economics. Required reading: (REF 1) Part A and Part B (complete) plus sections C.2 and C. 3 of Part C.	*Why is it that economic theory cannot pretend to address the "real world economy"? What are its implications for economic modeling? Why do we use the analytical concept of "equilibrium"? What is the difference between correlation and causality, and between identities and behavioral equations? What is the difference between economic policy in the "real world" and economic policy within the framework of a particular economic model? Distinctions between endogenous and exogenous variables, as well as stock and flow variables (with its applications).* *The widely used (albeit not quite understood by students) parameterization of functions with several explanatory variables: a typical analytical device used in economic analysis (somewhat weird for mathematicians) for graphical representations in two dimensional diagrams.*

Units and Content	Learning objectives
CHAPTER I .- Macroeconomic variables: definitions, measurement and interrelationships. **Sections 1 and 2.- National Accounts and the measurement of GDP.** Required readings: (REF 2) complete	*The student is expected to master several key definitions and actual measurement procedures for real and monetary aggregate variables. A deep learning of these real-world issues is expected.* *What is the difference between the concepts of " gross production value" and "value added" ? Why is the concept of "value added" such an important one for the purpose of measuring aggregate output?*

(REF 3) pages 22-26 (REF 4) chapter 2-1 (REF 5) chapter 2-5	*Which are the three different ways to compute total value added (GDP) in an economy? In what sense the definition of "final goods" from an economic point of view may differ from the one employed in national accounting ?* *What is the peculiar feature embedded in aggregate output (GDP) which makes it a nominal variable relatively more difficult to express in real terms ?*
Section 3. Other definitions and a key aggregate identity. Required readings: (REF 5) chapter 2-3	*How is the identity between aggregate saving and investment derived? Why is it such an important macroeconomic identity?*
Section 4.- The Balance of Payments.	*What does a balance of payments record? How can it be related to an accounting income statement?* *The classification of international transactions as different accounts in the balance of payments: the current account and the capital account.*
Section 5.-Monetary Accounting and the Money Supply Process Required readings: (REF 6) complete.	*Components of a Central Bank´s balance sheet. Accounting effects of foreign exchange operations and monetary policy. Monetary policy instruments.* *The components of Commercial Bank´s balance sheet. Accounting effects of monetary policy.* *The balance sheet for the Monetary System and the accounting definition for money supply.*

Units and Content	Learning objectives
CHAPTER II: **The Monetary Theory of Inflation.** Required reading: (REF 7) complete. • The Classical Model and the quantity theory of money • The monetary model of inflation • Extension: exogenous output growth • On the costs of inflation and related matters.	*Why is the "classical model" a useful one for the purpose of determining the equilibrium price level in an economy?* *What determines the economy´s time path of the inflation rate ?* *Why is it that the inflation rate overreacts / underreacts to changes in monetary policy?* *¿Why is it important for the dynamic behavior of the inflation rate to disentangle whether the private sector anticipates or is surprised by prospective changes in monetary policy?* *Why do policymakers care about inflation?*

Units and Content	Learning objectives
CHAPTER III: **Short–run macroeconomic behavior in a closed economy: the IS-LM model.** **A.- Preliminary considerations.** Required readings: (REF 8) section 17-6 **B.-Building the IS-LM model by stages.** B.1.- First Scenario: simplest Keynesian model B.2.- Second Scenario: Incorporating the government (fiscal policy) Required readings: (REF 9) complete (REF 5) chapter 9 B.3.-Third scenario: investment as an endogenous variable. The **IS** *equilibrium function* Required readings: (REF 10) pages 1-21 (REF 5) chapter 10-1 B.4.-Fourth Scenario. Incorporating the financial market. The **LM** *equilibrium function.* Required readings: (REF 10) pages 21-23 (REF 5) chapter 10-2	*What are some of the important sources for the degree of complexity in any particular macro model?* *Students must understand the way in which a general macro model can be constructed as a cumulative sequence of several smaller – size models. By doing so, they should grasp how the scope of any given model is limited by the coverage of economic agents whose decisions are modeled, the specific way in which such decisions are modeled, and the corresponding aggregate markets involved.* *The implication of households´ budget constraint for the specification of consumption and saving behavior.* *A key peculiarity in macroeconomics: two equivalent ways for defining equilibrium in the commodity market. ¡A useful redundancy! This is a crucial learning target for students.* *The distinction between qualitative and quantitative predictions in the Keynesian model.* *The general concept of "shock": a change in the value of any given exogenous variable or parameter in a model.* *The balanced - budget multiplier and its policy implications.* *Exogenous versus endogenous private investment: investment project evaluation and the concept of net present value. The role of the real rate of interest in investment decisions.* *The indeterminacy of the commodity market equilibrium under a reduced model with two endogenous variables.* *The key and widely used concept of an "equilibrium function" in macro modeling. The IS function as an equilibrium function.* *The mathematical and analytical proofs for determining the direction of IS shifts, whenever a "real" shock takes place. Determining the "arrows directions" : a useful ad hoc analytical device which students are expected to apply.* *The financial market and households´ wealth constraint.* *The private sector´s portfolio decision. The concepts (and functions) of money demand and demand for bonds.* *The wealth constraint and the redundancy of equilibrium in both monetary and bonds market for representing equilibrium in the financial market.*

B.5.-Final Scenario. The IS-LM model. Required readings: (REF 10) pages 23-31 (REF 5) chapter 10-3	*The indeterminacy of the financial market equilibrium on its own. Another "equilibrium function" emerges: the LM function.* *The concept of macroeconomic equilibrium:* *Analytical concept = simultaneous equilibrium in two aggregate markets (money market and commodity market)* *Mathematical concept = solution to a system of two (linear) equations (IS and LM) in two unknowns (r, GDP).* *The transmission mechanisms in the IS- LM model: monetary shocks versus real shocks.* *Applications of the IS-LM model: macroeconomic analysis. The crucial three-stage procedure: "impact effect", adjustment process, new equilibrium.* *Equilibrium effects of monetary and real shocks in all endogenous macroeconomic variables of the model.* *For different applications of the model – macroeconomic analysis- students are expected to fully understand the following:* *1.- Procedure. Students must always organize their analysis dividing it into three steps: a) impact effect; adjustment mechanism; new equilibrium.* *2.- The "impact effect" of any shock only depends upon two elements: a) which aggregate market is initially affected by the shock; and b) the nature of the initial disequilibrium (excess supply or excess demand) in the initially affected market.* *3.- Which of the two functions shift in response to a shock, as well as the direction of such a shift, entirely depends on the nature of the "impact effect" (it doesn't matter the specific shock in itself). You must use the ad-hoc procedure of the " directions of the arrows" in order to justify the direction of these shifts, and be prepared to present the corresponding proof (either the analytical proof or the mathematical proof).* *4.-The application of the model is incomplete unless the student determines the changes (increases or decreases) experienced in the levels of all endogenous variables of the model, as a consequence of the new macroeconomic equilibrium established (consumption, saving, government budget, investment, money demand).* *5.- Sometimes you cannot determine whether a given endogenous variable of the model increased, remained constant or decreased, just by considering (i) the explanatory variables included in the corresponding behavioral function and (ii) the movements in GDP and interest rates provoked by the shock.* *Changes in the endogenous variables induced by shocks are restricted*

	by the models´ equilibrium conditions. This is very important. But employing only one of the expressions for commodity market equilibrium may not be always enough. Hence, students should understand the importance of checking both ways for phrasing equilibrium in the commodity market, whenever apparently ambiguous results appear in some particular applications of the model . PS.- For the purposes of macroeconomic analysis, students are not expected to memorize the equations of the IS- LM model. These will always be provided. As a corollary, plugging specific numbers into the equations of the model is considered irrelevant (knowledge of high-school algebra is not tested). Only qualitative answers are expected.

Units and Content	Learning objectives
CHAPTER IV : **Macroeconomic behavior in an open economy: the IS-LM model under fixed exchange rates.** <u>Required reading</u>: (REF 11) complete. **A.- The IS function in an open economy.** • **Analytical definition** • **Mathematical definition** **B.- Incorporating another market into the model: the foreign exchange market.** • **The dual relationship between the foreign exchange market and the balance of payments.** • **Fixed exchange rates and the monetary adjustment of the balance of payments: short versus long-run equilibrium.**	*Expanding the scope of the IS-LM model :* *a)another economic agent: foreigners (also called foreign sector or external sector);* *b)another aggregate market: the (domestic) foreign exchange market.* *The demand and supply functions in the foreign exchange market as "derived functions" of international transactions. The foreign exchange market as a mirror of balance of payments transactions.* *The necessary incorporation of new aggregate demand components in the model, to account for international trade in goods and services.* *Determinants of exports and imports: the real exchange rate; domestic and foreign income.* *The incorporation of net exports in the IS curve. The simple relationship between the closed- economy and open- economy IS curve.* *The working of the foreign exchange market under fixed exchange rates.* *The assumption of gradual adjustment in the foreign exchange market : international reserves are* ***given*** *in the short run. They gradually adjust towards equilibrium.* *The adjustment in the foreign exchange market and the LM curve.* *The notions of short -run versus long- run equilibrium in the foreign exchange market (balance of payments).*

• **A new equilibrium function: the BP function.** **C.- Shocks to commodity trade shift both the IS and BP functions.** **D.- Applications of the basic model (only commodity trade)** **E.- Adding international trade in financial assets: the capital account of the balance of payments.** • **Determinants of the degree of capital mobility.** • **The BP function under different degrees of capital mobility.** • **The balance of payments adjustment process under capital mobility.** **F.- Applications of the complete model: IS - LM – BP.** **The distinction between short run and long-run effects of given shocks.** **Macroeconomic analysis once again.**	*The BP curve as a new equilibrium function in the IS-LM model. Role of the BP function in the macroeconomic equilibrium of the model. The adjustment mechanism under international trade in commodities.* *The distinction between short- run equilibrium (IS* ∩ LM**)** *and long-run equilibrium (*IS ∩ LM ∩ BP**)** *in this model.* *Long-run equilibrium* => d RIN / dt = BP = 0 *Computing horizontal shifts for the IS and BP curves: a necessary knowledge for several applications of this model.* *Reexamining the effects of monetary and fiscal policy:* ***short- run*** *versus* ***long-run effects*** *on output, interest rates; and in the entire set of endogenous variables of the model which depend upon* ***r*** *and/or* ***GDP.*** *Enhancing the model so as to include international trade in financial assets: the capital account of the balance of payments. New underlying transactions in the supply and demand functions at the foreign exchange market.* *What determines the elasticity of substitution between domestic and foreign interest bearing assets? How can the government affect such an elasticity? The role of "capital controls".* *The general case of imperfect substitution. The behavioral function for the "capital account balance". Implications for the adjustment mechanism of the balance of payments.* *The BP function under imperfect capital mobility.* *The LM function under imperfect capital mobility depends upon an exogenous variable: foreign interest rate.* *Horizontal shifts of the BP function: same previous algebraic expressions hold. Why?* *Reexamining the effects of monetary and fiscal policies:* ***short- run*** *versus* ***long-run effects*** *on output, interest rates under imperfect capital mobility. Another endogenous variable to assess : the composition of the balance of payments between the current and capital accounts.* *The special case of perfect capital mobility: elasticity of substitution among domestic and foreign interest bearing assets equals infinity. The BP curve under perfect capital mobility.* *Why is it that any given shock may imply different long run macroeconomic equilibria depending on the economy´s degree of capital mobility?* *The key rationale for explaining differences in long run equilibrium triggered by any given shock:* *asymmetry in terms of short-run effects on the balance of payments* ***+*** *output and interest rate implications due to the monetary*

	adjustment mechanism following either a balance of payments surplus or deficit . *Reexamining long- run effects of fiscal and monetary policies : different degrees of capital mobility.* *Key rationale for understanding the asymmetry of these policies: monetary policy moves both balance of payments accounts in the **same** direction, whereas fiscal policy moves them in **opposite** directions. Hence, in the case of monetary policy it turns out to be irrelevant the degree of capital mobility, whereas for fiscal policy such an issue is key.*

Units and Content	Learning objectives
CHAPTER V : **Macroeconomic behavior in an open economy: the IS-LM model under flexible exchange rates.** Required readings: (REF 12) complete **A.- The adjustment of the foreign exchange market under flexible exchange rates.** **B.- Flexible exchange rates and aggregate demand.** **C.- The role of the IS and BP functions throughout the economy's adjustment process towards long-run equilibrium.**	*Changing the type of exchange rate system alters the adjustment mechanism in the foreign exchange market. Thus, there is no difference in terms of short run equilibria in the model. The differences appear in the long- run equilibrium and in the specific characteristics of the path between the economy's short and long run equilibria.* *The behavior of the (domestic) foreign exchange market under flexible exchange rates.* *The assumption of gradual adjustment in the foreign exchange market : exchange rate is **given** in the short run. It gradually adjusts towards equilibrium.* *The nominal exchange rate as an endogenous variable: implication for net exports.* *The exchange rate (e) and the IS curve. Under fixed prices, nominal and real exchange rates move pari passu.* *The distinction between short- run equilibrium (IS* ∩ LM**)** *and long-run equilibrium (*IS ∩ LM ∩ BP**)** . *Long-run equilibrium* => d e / dt = 0 => BP = 0. *Implications of the balance of payments adjustment mechanism for the equilibrium functions of the model:* *a) IS function necessarily shifts through time* *b) BP function shifts through time when only international trade in commodities is considered, and also when trade in financial assets is introduced (unless domestic and foreign financial assets are perfect*

D.- Applications of the IS - LM – BP model under flexible exchange rates. **D.1.- Only international trade in goods and services.** **D.2.- Adding International trade in financial assets.** **----------** **E.- Comparisons of long run effects under fixed versus flexible exchange rates.**	*substitutes).* *Can we use the same algebraic expressions used under fixed exchange rates to account for the relative magnitudes of horizontal shifts in the IS and BP functions under flexible exchange rates? Yes! Such expressions do not depend on the nature of the source of the shift. Under fixed exchange rates those functions shift whenever there exists an exogenous change in net exports. Under flexible exchange rates, those functions shift due to an endogenous change in the nominal (and real) exchange rate, as part of the adjustment in the foreign exchange market (balance of payments).* *Economic Policy under flexible exchange rates and different assumptions regarding capital mobility.* *----------* *Strategy. There are two different assumptions you may consider: a) the degree of capital mobility; b) the type of exchange rate system. You should always change one of these assumptions at a time, holding fixed the other one. Otherwise, it does not make sense.*

CHAPTER VI : **On the determinants of Economic Growth.** <u>Required readings</u>: (REF 13)	*The two parts typically involved in actual growth in GDP:* *a) a movement of short- run equilibrium output towards the production possibilities frontier; and* *b) a movement in long-run equilibrium output ("potential output" or "full- employment output") due to shifts in the production possibilities frontier.* *Only the latter source for output changes is the subject matter of the theory of economic growth. Hence, economic growth is defined here as the rate of change in potential (real) aggregate output.* *The concept of "aggregate production function".* *Why do we care only about **per capita GDP** instead of plain GPD for the purpose of understanding the determinants of economic growth?* *What are the **explicit** and **implicit** explanatory variables underlying firms´ production functions?* - *Explicit = amounts of different types of inputs and primary factors of production.* - *Implicit = physical productivity of factors of production, and "structural characteristics" of the production functions; such as specific types of inputs, and parameters of the functions (degree of homogeneity, period of production).* *Definition of "primary sources" of economic growth = a limited set of shocks or events which restrict the sources for changes in potential output.* *The three primary sources of economic growth :* *i) changes in the **amounts** (supplies) of a given set of factors of production;*

	*ii) changes in the **physical productivities** of a given set of factors of production;* *iii) **structural changes** in production **functions.*** ***A.**- <u>Changes in factor supplies</u>* *- Population, employment and per capita GDP* *- Changes in the capital stock: investment. The role of the saving - investment identity. (The Solow model treats this)* *- Changes in the stock of natural resources (discoveries, and/or increases in their utilization rate through investment)* ***B.**-<u>Changes in physical productivities of factors of production</u>:* *- Technologically induced : **"incorporated technical progress"*** *- Non Technologically induced (investment in human capital through education, health; improvements in labor environment within firms, etc.)* ***C.**- <u>Structural changes in production functions</u> : **"structural technological innovation"*** *- Substitution of "old" inputs by "new" inputs in existing production.* *- New goods or services produced (output innovations)* *-Reductions in periods of production (production processes innovations) in existing production.* *- Increases in the degree of economies of scale (due to market size increases, for example)* *"Time horizons" for these three sources:* *Primary source **A** is a relatively shorter- term source; **B** is a medium – term source, **C** is a longer-term source.* *First two sources are empirically important for most countries. Source **C** is relatively more important for highly developed countries.* *● Discussion about the determinants of the determinants:* *Public policies and private within- firm policies which may impact the specific determinants of each primary source of economic growth.*

E. Teaching strategies

Classes will be expository (and the participation of the students will be encouraged). Readings and Problem-sets will be assigned. The virtual platform Canvas, will be used.

E. Grading and requirements
This course will have several regular evaluations as well as a comprehensive final exam. Students will know in advance the evaluation criteria used by the instructor responsible for the course.

Evaluaciones
Certamen 1
Certamen 2
Promedio de Test
Examen
TOTAL

Requirements and Grading
NOTE: *A minimum class attendance of 75% is required to pass the course*

G. Learning Resources

BIBLIOGRAFÍA OBLIGATORIA:

Mena, Hugo: "Ciencia económica: Metodología y Conceptos primarios". LOM Ediciones, Serie Universitaria,2012. Available in the library. **(REF 1)**

Mena, Hugo: "Aspectos conceptuales fundamentales de Contabilidad Nacional. La medición del PIB en términos nominales." Junio, 2013. Course website. **(REF 2)**

Blanchard, Olivier: "Macroeconomics". Seventh Edition. Available in the library**.(REF 3)**

Mankiw,Gregory:"Macroeconomics".Third Edition.Available in the library. **(REF 4)**

Dornbusch, Rudiger; Fischer, Stanley; & Starz, Richard: "Macroeconomics". Tenth Edition. Available in the library. **(REF 5)**
Mena, Hugo : " El proceso de oferta monetaria". Nov. 2013. Course website. **(REF 6)**

Mena, Hugo : "Teoría Monetaria de la Inflación". Oct. 2007. Course website. **(REF 7)**

Sachs, Jeffrey & Larraín, Felipe: "Macroeconomía en la Economía Global". Primera edición. **(REF 8)**

Mena, Hugo : "El modelo keynesiano básico con sector público e inversión exógena". Abril, 2011. Course website. **(REF 9)**

Mena, Hugo: "Aspectos Conceptuales y Analíticos Fundamentales en el Modelo IS-LM de Economía Cerrada". Mayo, 2011.Course website. **(REF 10)**

Mena, Hugo: "El Modelo IS-LM- BP bajo tipo de cambio fijo". Course website. **(REF 11).**

Mena, Hugo **:** " Política Económica en el Modelo IS-LM- BP bajo tipo de cambio libre". Course website**. (REF 12)**

Mena, Hugo : " Acerca de los determinantes del crecimiento económico". Course website ppt.
(REF 13)

Bibliografía Complementaria:

Barro, Robert: Macroeconomics. Fifth Edition.

Mena, Hugo : "Some theoretical issues in modelling LACs within an equilibrium framework. The role of credit markets in consumption and labor market behavior". Journal of Economic Modelling. 1996. (upon request)

Mena, Hugo: "El modelo IS- LM con ajuste gradual de precios: Análisis Macroeconómico y Políticas de estabilización". 72 pages. (upon request)

Mena, Hugo :"El Mercado del Trabajo y el *locus* de oferta agregada". 22 pages. (upon request).