INSTITUTE OF HEALTH ECONOMICS
UNIVERSITY OF DHAKA

Curriculum and Academic Rules for
B.S.S., M.S.S., M.Phil and
Ph.D. in Health Economics

FROM SESSION 2017-2018

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Section 4

Section 1

Institution Profile

Background

In order to rapidly improve the health status of the people *en masse*, the Government of Bangladesh has been implementing a comprehensive package of reforms in the Health and Population Sector. The magnitude of health services to be devoted per person has been increased, and the measures have been proposed to drastically enhance the quality of services. Implementation of new plan requires huge amount of resources for the sector, the only way to increase the coverage and improve the quality of services is to intensively utilize the existing facilities and allocate the resources to the sectoral activities more efficiently. Increased allocative efficiency of resources requires, on the other hand, imparting training in health economics to the managers and professionals of the sector and carrying out research on health economic issues.

The Government has increasingly felt the need for training of the personnel of the sector and conducting research in health economics, and started sending officials abroad to study health economics. It later became evident that the cost of overseas training of each person is so high that the government will not be able to train the required number of personnel using the small amount of fund received from the donors. In such a situation, the Ministry of Health and Family Welfare (MOHFW) approached the University of Dhaka to establish an Institute to offer post-graduate degrees and conduct training programs in Health Economics and carry out research on health economic issues. As a result, the Institute of Health Economics (IHE) was established in the University of Dhaka in July 1998 with the financial support of the Department for International Development (DFID), and the University of Dhaka. Currently, IHE offers. full range of academic programmes: B.S.S., M.S.S., M.Phil., Ph.D. in Health Economics. Moreover, it is carrying out extensive research activities in the field of Health Economics.

Mission

To establish an academic entity within the University of Dhaka for teaching and training in order to build health economists, and to develop, strengthen and build up capacity of the health sector professionals, academicians, and health service managers, and for organizing and conducting practical policy-oriented research for the sector.

Objective

- To provide professional degrees in Health Economics.
- To train health sector personnel on Health Economics, Health Policy, Health Care Management, and Health Systems.
- To identify policy-relevant health economics/ systems research and projects.
- To assist Government of Bangladesh in review and formulation of policies, analysis of the health systems, and advise government and semi-government organizations on health sector issues.
- To develop links with national and international agencies and organizations engaged in the development of and research for health and population sector, particularly those addressing health economics, health systems, health care management, and policy issues in order to strengthen the Institute's capacity for research and training in Health Economics.
- To undertake research and studies on health economic issues sponsored by public and private organizations independently or in collaboration with national or international organizations.

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Activities of the Institute

- To run undergraduate programs (B.S.S. in Health Economics)
- To run post-graduate degree programs (M.S.S. in Health Economics, Executive Master of Health Economics)
- To run M. Phil and Ph.D. programs
- To carry out research, provide consulting service assistance to health sector, and
- To develop an Information Resource Centre

Governance and Management

A Board of Governors governs the functioning of the Institute. The Board of Governors comprises of distinguished personnel from the Ministry of Health and Family Welfare, the University of Dhaka and other Organizations. The Vice-Chancellor of the University chairs it.

The Academic Board of the Institute decides the overall academic policy matters. The day to day academic activities are carried out by the Academic Committee composed of all the faculty members, and the Co-ordination and Development Committee deals with the administrative issues. The Director of the Institute is responsible for the overall management.

Faculty Members

The faculty members have research and teaching experiences in the fields ofHealth Economics, Economics, Applied Econometrics, Health Care Management and Operations Research, Public Health, Research methods and Epidemiology. A number of guest faculty members who are mostly from different departments of the University of Dhaka, ICDDR,B, NIPSOM and Health Economics Unit of the MoHFW, are also associated with the Institute. Some visiting scholars from the reputed international universities and organizations are also invited at the institute as guest lecturer.

Section 2

SYLLABUS

2.1 : LIST OF COURSES

List of courses for B.S.S. (Honours)

First Year

1st Semester	2nd Semester
HE 101: Principles of Economics I	HE 105: Principles of Economics II
HE 102: Mathematics I	HE 106: Medical Sociology
HE 103: Statistics I	HE 107: Mathematics II
HE 104: Health Sciences	HE 108: Statistics II
	Viva Voce

Second year

3rd Semester	4th Semester
HE 201: Microeconomics I	HE 205: Economics of Health Care I
HE 202: Macroeconomics I	HE 206: International Economics
HE 203: Techniques of Planning and Management Decision Analysis	HE 207: Public Health
HE 204: Public Economics	HE 208: Labour Economics
	Viva Voce

Third Year

5th Semester	6th Semester
HE 301: Microeconomics II	HE 305: Mathematics III
HE 302: Techniques of EconomicEvaluation of Health Care I	HE 306 Hospital Management
HE 303: Econometrics I	HE 307: Econometrics II
HE 304: Accounting and Finance	HE 308: Economics of Health Care II
	Viva Voce

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Fourth Year

7th Semester	8th Semester
HE 401: Techniques of Economic Evaluation of Health Care II	HE 406: Economics of Health Care III
HE 402: Environmental Economics	HE 407: Structure and Management of Health Sector
HE 403: Development Economics	HE 408: Pharmacoeconomics
HE 404: Econometrics III	HE 409: Macroeconomics II

List of courses for M.S.S.

First Semester	Second Semester
HE 601: Advanced Microeconomics I	HE 607: Advanced Microeconomics II
HE 602: Advanced Macroeconomics	HE 608: Economic Evaluation of Health Care
HE 603: Advanced Health Economics	HE 609: Health Sector Reform
HE 604: Public Health and Epidemiology	HE 610: Advanced Topics in Development Economics
HE 605: Applied Econometrics **OR** HE 606: Health Policy and Planning	HE 611: Research Methodology, Dissertation and Viva-Voce **OR** HE 612: Project Development andViva-Voce

List of courses for M.PHIL

First Semester	Second Semester
701 (A) : Economics of Health Care	701 (B) : Management of Health Services
Third Semester	**Fourth Semester**
702 (A) : Applied Econometrics	702) : Research Methodology

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2.2: B.S.S. (Honours) in Health Economics

First Year

First Semester

HE 101: Principles of Economics I

Course objectives are to:
- Explain basic economic principles
- Familiarize with the microeconomic models that can be used toconsider fundamental economic choices of households and firms
- Train students to apply the basic concepts of microeconomics in reallife situations

Learning outcomes:

Upon successful completion of the course students will be able to:
- Describe the nature of economics in dealing with scarce resources
- Perform supply and demand analysis to analyze their impact ofeconomic events on markets
- Analyze the behavior of consumers
- Evaluate the factors affecting firm behavior, such as production andcosts
- Distinguish different market structures
- Interpret and use economic models, diagrams and tables and usethem to analyze different economic situations

Course contents:

Introduction: What is Economics? Scope and subject matter of economics, scarcity and efficiency, free goods vs. economic goods, microeconomics vs. macroeconomics, different economic systems (market economy, command economy, mixed economies), Key problems of economic organization (what, how, whom), revolution of microeconomics, the production possibility frontier: (definition, derivation of PPF, productive efficiency, and various economic processes)

Basic elements of demand: What is demand? Law of demand, demand function, factors affecting the demand, demand schedule, demand curve, shiftsin demand, movements along the demand curve, market demand.

Basic elements of supply: Definition of supply, law of supply, supply function factors affecting the supply, supply schedule, supply curve, shifts in supply, movements along the supply curve.

Market: Supply and demand interaction; market equilibrium

Elasticity of demand: Definition, types of elasticity and its measurements, factors affecting elasticity of demand, relationship between elasticity of demand and revenue generation.

The theory of consumer behavior: Marshallian demand theory, basic assumptions, law of diminishing marginal utility, law of equi-marginal utility, consumer equilibrium, derivation of demand curve through

Marshallian approach.

Indifference curve approach: Basic assumptions, law of diminishing marginal rate of substitution, indifference curve, indifference map, budget line, consumer equilibrium, PCC, ICC

The theory of firms: Production function, factors of production, short runand long run, total product, marginal product, average product, law of diminishing marginal product, returns to scale,

The theory of costs: Concepts of costs, fixed cost and variable cost, derivation of short run and long run cost curves (TC, MC, AC, AVC, TVC, TFC), relation between different types of cost curves

Market structure: Definition and characteristics of different markets **Perfect competition:** Behavior of a competitive firm, short run equilibriumof a firm in the competitive market, long run equilibrium, industry supplycurve, break-even point, shut down point
Monopoly market: Behavior of a monopolist, mark-up pricing, short run and long run equilibrium of a monopolist, consumer and producer surplus, dead weight loss of monopoly

References:

1. Samuelson, P.A. and Nordhaus, W D., Economics,18th edition,Irwin/McGraw-Hill, 2004.
2. Mankiw, N.G. Principles of Economics, 4th Edition, Thomson, 2007
3. Baumol, William J., and Alan S. Blinder. Microeconomics: Principles andpolicy, 13th Edition Cengage Learning, 2015.
4. Pindyck, R.S. and Rubinfeld, D.L. Microeconomics, 5th Edition, Prentice-Hall, 2003.

HE 102: Mathematics I

Course objectives are to:
- Familiarize with the basic mathematical theory, equation, number system, function and equilibrium concept.
- Introduce the limit concept and extend the understanding to differentiation
- Make the learner able to apply the mathematical theories to economicmodel of the real world and determine a feasible solution

Learning outcomes:
Upon successful completion of the course students will be able to:

- Identify the mathematical theory which can be applied to investigate economic model
- Distinguish different number system and administer them to different problems
- Assign the marginal concept to different economic problems and interpret them

Course contents:

Basic Concepts, Real Number and Set Theory: Definition of variables, equations etc., integer, fractions etc., definition of Set & set relationships, operations on Set, laws of operation of Set, Cartesian product,

relation & function

Theory of Set: Definitions (set, element, finite infinite, null unique, equal, equivalence, subset, comparability, disjoint, family, power, universal, Venn diagram, representation of sets, basic operations (union, difference, intersection), De Morgan's law, idempotent law, identity law, partition numbers and elements of sets etc.)

Laws of Indices, Graphs, Static Market Equilibrium: Laws of Indices, slope, intercept, definition of equilibrium, partial market equilibrium linear model & equilibrium solution, partial market equilibrium non-linear model, general market equilibrium model (two commodity), equilibrium in national income analysis.

Comparative Static Analysis: Concepts, difference quotient, derivative, derivative & Slope, the concepts of limit, rules of inequalities, absolute value, solution of inequality, continuity of a function & differentiability of a function. **Differentiation:** Rules of differentiation & practice, partial differentiation, economic application (marginal & average functions, relationship between total, marginal and average concepts).

Differentiation & Comparative Static Analysis: Application to comparative static, analysis (market model, national-income model), differential and derivatives, differential and point elasticity, total differential, rules of differentials, total derivatives, implicit function rules, inverse function rules.

References:

1. Chiang, Alpha C and Kevin Wainwright. Fundamental Methods of Mathematical Economics, 4th Edition, McGraw- Hill/Irwin, New York,2005.
2. Dowling, Edward T. Schaum's Outline Introduction to MathematicalEconomics, 3rd Edition, McGraw-Hill, 2011
3. Sydsaeter, Khut& Peter Hammond. Essential Mathematics forEconomic Analysis, 3rd Edition, Knut, Prentice Hall, 2002
4. Hoy, Michael, John Livernois, Chris McKenna, Ray Rees, and ThanasisStengos. Mathematics for economics. MIT press, 2011

HE 103: Statistics I

Course objectives are to:

- Provide a broad introduction to statistical concepts and data analysistechniques
- Develop an understanding of descriptive statistics

Learning outcomes:

Upon successful completion of the course students will be able to:

- Organize and summarize data graphically and numerically
- Use proper techniques to analyze data
- Draw conclusions from the results of data analysis

Course contents:

Introduction: Statistics defined uses of statistics, scope of statistics, data andtheir types, variables and their classification, classification of statistical techniques, measurement scales /levels.

Presenting data: Data processing and summarizing, frequency distribution, tabulation of data, graphical presentation of data (histogram, frequency polygon, bar diagram, pie chart, leaf-stem, Box –Jenkins, etc.)

Measures of central tendency: Central tendency, measures of central tendency (mean, median, mode).

Measures of dispersion: Dispersion/variability, measures of dispersion (mean deviation, quartile deviation, standard deviation & variance), moments and skewness /kurtosis.

Simple correlation and regression: Scatter grams, the regression line, correlation coefficient, uses of correlation and regression, method of least squares, linear regression, regression of X on Y, regression of Y on X.

References:

1. Anderson, David R., et al. Essentials of statistics for business andeconomics. Cengage Learning, 2014
2. Newbold, Paul, William Carlson, and Betty Thorne. Statistics forbusiness and economics. Pearson, 2012.

    Larsen, Richard J., and Morris L. Marx. An introduction to mathematical statistics and its applications. Vol. 2. Englewood Cliffs,NJ: Prentice-Hall, 1986. Murray Spiegel, R. Theory and Problems of Statistics in SI Units. McGraw-Hill International Book Company;Singapore, 1972.
3. Islam, M.N. An Introduction to Statistics & Probability.

HE 104: Health Sciences

Course objectives are to:

- Provide definition health, disease, their various causation theories and ways of prevention
- Learn the basic concept and difference between communicable and non-communicable diseases from public health context
- Understand the important demographic indicators used to measurethe health status of a population
- Gain knowledge on national health programmes such as EPI and NNP and their importance in improving health status of the country

Learning outcomes:

Upon completion of the course, students should be able to:

- Understand the basic concept of health, disease and prevention along with their historical

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background

- Identify the socio-economic, behavioral, biological, environmental, and other factors that impact human health and contribute to health disparities.
- Describe the leading health problems in Bangladesh
- Illustrate the importance of demographic indicators for health and how to use them in practice
- Explain the current maternal and child healthcare status in Bangladesh

Course Contents:

Concept of health: WHO definition of health, positive health, changing concept of health, health sickness spectrum, concept of well-being, component of well being

Concept of disease: Definition, ecological triad of disease, disease cycle, spectrum of disease, diseases causation theories, health problem of Bangladesh, international classification of disease

Concept of disease prevention and control: Level of prevention, concept of control- elimination and eradication, herd immunity, EPI, NID. **Introduction to communicable disease:** Disease chain; principle of prevention and control of communicable disease; disease of GIT, respiratory, STD, arthropod diseases.

Non-communicable diseases: Risk factor s for NCD, HTN, CHD, DM, cancer

Food and Nutrition: Definition of food – nutrition – diet, division and sub division of nutrient, source-requirement- deficiency of vitamin & minerals, dietary goals, nutritional status assessment method, nutrition program of Bangladesh (child obesity, women obesity).

Maternal and child health care: Definition, components of MCH, antenatal care, intranatal care, postnatal care, high risk mother, Kangaroo mother care, indicators of MCH care, new born care, neonatal care, identification of at risk infants, clear term – low birth weight, very low birth weight and small for date babies. Feeding of infants, growth and monitoring (growth chart), child health problems, IMCI

Basic demography: Demography statistics- CBR, CDR, death rate, birth rate, GFR, TFR, GRR, NRR, growth rate

Leading diseases for death for Bangladesh

References:
1. Henry Gray. Gray's Anatomy. Churchill Livingstone, 2008.
2. Arthur Guyton. Text Book of Physiology. Prism publishers
3. William F Ganong. Review of Medical Physiology. 23rd Ed .
4. Masters, Susan B., and Anthony J. Trevor. Basic & clinical pharmacology. Edited by Bertram G. Katzung. McGraw-Hill Medical, 2016.
5. Robbin's Basic Pathology. 7th edition
6. Alcamo. Fundamentals of Microbiology 7th edition
7. MR Choudhury. Immunology and Parasitology.
8. Davidson's principles and Practice of Medicine. 19th edition. Churchill Livingstone.
9. Rashid KhabirHydar. Text Book of Community Medicine of PublicHealth.
10. Park and Park. Text Book of Community Medicine.
11. WHO Report.

Second Semester

HE 105: Principles of Economics II

Course objectives are to:
- Explain basic macroeconomic issues
- Train students in basic models related to macroeconomic
- Describe how government policy influences macroeconomic outcomes

Learning outcomes:

Upon successful completion of the course students will be able to:
- Compute different measures of macroeconomic activity such as thenational income accounts, inflation, and unemployment
- Identify the causes and consequences of business cycles
- Analyze the forces that affect the aggregate level of economic activityusing AD-AS analysis
- Develop basic ideas related to banking and the foreign exchangemarket operations
- Recognize how monetary and fiscal policy can be used to achievepolicy goals

Course contents:

Introduction: Basic concepts of macroeconomics- what is macroeconomics, how do we aggregate?

Macroeconomic markets: Introduction to macroeconomic markets and issues such as consumption, investment, unemployment, inflation, foreign debt, exchange rates, interest rates, govt. budget deficit, trade-offs and Tinbergen's rule.

Measuring aggregate output and the price level: Circular flow of income; injections and leakages. GDP, GNP, difference between GDP and GNP, three alternative ways of measuring GDP, the accuracy in measured GDP, the CPI and the GDP deflator.

Aggregate demand and aggregate supply: Short-run and long run aggregate supply, shifts in aggregate demand and aggregate supply curves, macroeconomicequilibrium.

Aggregate expenditure decisions: Private consumption, private investment, government purchases of goods and services, net exports, autonomous and induced expenditure.

Equilibrium expenditure and output: The autonomous expenditure multiplier, relationship between the aggregate expenditure and aggregate demand curves; derivation of the aggregate demand curve.

Money and banking: The economic functions of financial intermediaries, how banks create money, the simple money multiplier, the Central Bank and open market operations.

Unemployment: Some definitions-labour force participation rate, frictional, structural and natural unemployment, Beveridge curve, causes and types of unemployment.

Inflation: Anticipated and unanticipated inflation, costs of inflation, demand- pull and cost-push inflation.

References:

1. Parkin, M., Macroeconomics. Addison-Wesley, 2005/ latest edition.
2. Samuelson, P.A. and Nordhaus, W D., Economics, 18th edition,Irwin/McGraw-Hill, 2004.
3. N Gregory Mankiw, Macroeconomics, 9th edition, Worth Publishers,2015
4. Paul Krugman & Robin Wells, Macroeconomics, 4th edition, WorthPublishers, 2015

HE 106: Medical Sociology

Couse objectives are to:

Provide an introductory overview of the social facets of health, disease, illness, and the organization/delivery of medical care and health care

Learning outcomes:

Upon successful completion of the course students will be able to:
- Summarize, critique, discuss, and provide examples of a variety of theories, research, and issues related to medical sociology.
- Apply sociological theories, concepts, and research to your own experience of health, illness, and health care

Course contents:

- Introduction to medical sociology
- Sociological perspectives on health
- Who gets sick?
- Health behaviours
- Social stress
- Meanings of illness and disability
- Medicalization, social control & the sick role
- Medicine as a profession
- Doctor-Patient Interactions
- Complementary and alternative medicine
- Other ways of organizing health care: what do other nations do?

References:

1. Weiss, Gregory L. and Lynne E. Lonnquist. The Sociology of Health,Healing and Illness. 5th edition. (Upper Saddle Rive, NJ: Pearson/Prentice Hall), 2006.
2. Fadiman, Anne. The Spirit Catches You and You Fall Down: A HmongChild, Her American Doctors, and the Collision of Two Cultures. (NewYork: Farrar, Straus and Giroux), 1997.
3. Giddens, Anthony. Social theory and modern sociology. StanfordUniversity Press, 1987.
4. Meta Spencer: Foundation of Modern Sociology, Prentice Hall, 1989.
5. Smelser, Neil J. Handbook of sociology, 1988).
6. Ian Robertson. Sociology, Worth Publishers, 1987.
7. Bottomore, Tom B. Sociology (Routledge Revivals): A guide to problemsand literature. Routledge, 2010.
8. David Popenoe, Sociology. Pearson Education, 1999

HE 107: Mathematics II

Course objectives are to:

- Introduce to the concept of matrix and its application to economic model
- Calculate the optimum value of any economic model and implement itto the real-world problem
- Analyze different economic models affiliating time and evaluate the stability of the equilibrium over time

Learning outcomes:

Upon completion of the course learners will be able to:

- Optimize the economic model and relate it to the real-world situation
- Formulate different model using matrix and find solution by applying different theories
- Evaluate the stability of any model and execute it to the health sector
- Distinguish the application of different types of time in economic model and interpret in accordance with it

Course contents:

Expansion of Functions: Maclaurin and Taylor series.

Optimization: Optimum values and extremum values, relative extrema, 1st & 2nd derivative test, n-th derivative test, optimization of multivariable functions; the differential version, quadratic forms, optimization with equality constraints- the Lagrange multiplier (examples from health sector)

Matrix Algebra: Definition, terms & concepts, matrix Operation (addition,subtraction & multiplication), laws of operation (commutative, associative

&distributive law), identity matrices & null matrices, transposes & inverses & their properties, condition for nonsingularity, rank matrix, determinant and nonsingularity, evaluating determinant, Laplace expansion for higher order determinants, properties of determinant, solving linear equation with Inverse, Cramer's rule, application to market model, application to national- incomemodel, application of consumer, producer theory, and welfare economics.

Economic Dynamics and Integral Calculus: Dynamics and integration, rules of integration, properties of integrals, indefinite and definite integral,integration by substitution and by parts; area under a curve, improper integral, some economic applications of integral, consumer and producer surplusmeasures, Domar growth model (examples from health sector)

Continuous Time: First order differential equation; first order linear differential equations, dynamics of market price, exact differential equation, Solow growth model.

Discrete Time: First Order difference equations; discrete time, difference, difference equations, solving a first order difference equation, the dynamic stability of equilibrium, the Cobweb model, second order difference equation

References:

1. Chiang, Alpha C and Kevin Wainwright. Fundamental Methods of Mathematical Economics, 4th Edition, McGraw- Hill/Irwin, New York,2005.
2. Dowling, Edward T. Schaum's Outline Introduction to MathematicalEconomics, 3rd Edition, McGraw-Hill, 2011
3. Sydsaeter, Khut& Peter Hammond. Essential Mathematics forEconomic Analysis, 3rd Edition, Knut, Prentice Hall, 2002
4. Hoy, Michael, John Livernois, Chris McKenna, Ray Rees, and ThanasisStengos. Mathematics for economics. MIT press, 2011.
5. Simon, Carl P., and Lawrence Blume. Mathematics for economists.Vol. 7. New York: Norton, 1994.
6. G. Hadley. Linear Algebra. 1987.

HE 108: Statistics II

Course objectives are to:

- Introduce with the inferential statistics
- Make predictions and draw conclusions from the data

Learning outcomes:

Upon successful completion of the course students will be able to:

- Calculate probability of any event
- Make decision about sampling for any scientific research

- Design and evaluate any statistical test
- Write a report based on the results of a statistical analysis
- Apply statistical techniques to problems arising from diverse fields ofresearch

Course contents:

Introduction to Statistical Inference: Basic concepts of statistical inference, the nature of statistical inference, sampling distributions, properties of samplingdistributions, derivation of sampling distributions

Experimental Derivation of Sampling Distributions: Sampling distribution of sample proportion of successes, sampling distribution of sample mean

Probability: Introduction; basic concepts in probability, three types of probability, probability rules, probabilities under conditions of statistical independence, probabilities under conditions of statistical dependence (examplesfrom health sector)

Probability distributions: Probability distributions and random variables; The Binomial distribution, Poisson distribution, normal distribution, standard normal distribution; properties of the standard normal distribution.

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Sampling: Sample, census and sampling, sampling techniques, errors & biases in sampling; sampling distribution (examples from health sector)

Theoretical Derivation of Sampling Distributions

Test of hypothesis: Design and evaluation of tests, distribution of selected test statistics

Estimation: Methods of estimation, point estimates, confidence intervals, significance tests

References:

1. Kmenta, Jan: Elements of Econometrics, 2nd edition, Macmillan, New York, 1986.
2. Anderson, David R., et al. Essentials of statistics for business andeconomics. Cengage Learning, 2014
3. Newbold, Paul, William Carlson, and Betty Thorne. Statistics for business and economics. Pearson, 2012.
4. Larsen, Richard J., and Morris L. Marx. An introduction to mathematical statistics and its applications. Vol. 2. Englewood Cliffs, NJ: Prentice-Hall, 1986.Murray Spiegel, R. Theory and Problems of Statistics in SI Units. McGraw-Hill International Book Company; Singapore, 1972.
5. Islam, M.N. An Introduction to Statistics & Probability.

Third Semester

HE 201: Microeconomics I

Course objective:

This course focuses on decision making in markets. Microeconomic theory is used to explain behavior of individuals and firms. Consumer theory explains how individuals decide what and how much to buy and production theory describes how firms decide what and how much to sell under different economic environments. These theories, explained using words, tables, graphs, algebra and calculus, form the basic building blocks in understandingmarket structures such as perfect competition, monopoly, monopolistic competition and oligopoly as well as market imperfections such as externalities and asymmetric information.

Learning outcomes:

Upon successful completion of the course students will be able to:

- Explain the basics of microeconomic theory.
- Master the main set of microeconomic concepts useful in analyzing supply, demand, market, and policy issues.
- Understand the nature and consequences of general equilibrium (Pareto optimality)
- Apply microeconomic analysis to economic fields, including health, labor, development, taxation, international trade, etc.
- Apply microeconomic concepts and related tools to unfamiliar real- world situations and to critically analyze the effects of alternative policy tools on market outcomes

Course contents:

The Theory of Consumer Choice: Budget constraint, preference, utility, choice, demand- price consumption curve and demand curves, income consumption curve and Engel curve, Slutsky's equation: Income effect and substitution effect, the theory of revealed preference (examples from health sector)

The Theory of Production: The production function, homogeneousproduction function, properties of linear homogeneous production function, stages of production and health production function; technological constraints, iso-cost, Isoquant, producer's equilibrium, expansion path, derivation of the cost curve from the production function, technological progress.

Cost minimization: Returns to scale and the production function, different types of cost, cost curves and their interrelationship: Long run and short run view (examples from health sector), the long run ‚Envelope curve', economies and diseconomies of scale

Perfect Competition: The supply decision of a competitive firm; short run and long run view, profits and producers' surplus, industry equilibrium in theshort and long run.

Monopolistic competition: Product differentiation, equilibrium of the firm, comparison with pure competition

Monopoly: Price discrimination, natural monopoly, multiplan monopolist, bilateral monopoly

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Exchange: The Edgeworth box, Pareto efficient allocation, Walras' law, equilibrium and efficiency, first and second welfare theorem

References:
1. Varian, Hal R. Hal R. Intermediate Microeconomics; a modernapproach. No. 04; HB172, V3y. 1987.
2. Eckert, Ross D., and Richard H. Leftwich. The price system andresource allocation. Harcourt School, 1988.
3. Henderson, James M. James M., and Richard E. Quandt. Microeconomic theory: A mathematical approach. No. 04; HB171. 5,H4 1980. 1980.
4. Koutsoyiannis, Anna. Modern microeconomics. Springer, 1975.
5. Perloff, Jeffrey M. Microeconomics: theory and applications withcalculus. Pearson Higher Ed, 2017.
6. Nicholson, Walter, and Christopher Snyder. Microeconomic theory:Basic principles and extensions. Nelson Education, 2011.

HE 202: Macroeconomics I

Course objectives are to:

- Explain the classical revolution
- Explain production and employment according to classical theory
- Explain how to derive vertical aggregate supply curve and itsimplications in the economy
- Explain quantity theory of money and its implications in theeconomy
- Describe the simple model of determination of equilibrium incomeaccording to Keynesian theory
- Describe consumption and savings function, multipliers and effectsof fiscal and monetary policies
- Explain the demand for money, supply of money and money marketequilibrium
- Describe the IS curve, equilibrium in the goods market, the LM curve, the IS-LM model, impacts of contractionary and expansionarymonetary and fiscal policy on the IS-LM model, crowding out effect, liquidity trap and derivation of aggregate demand curve
- Introduce the linkages of macroeconomics and health

Learning outcomes:

Upon successful completion of the course students will be able to:
- Understand different classical theories and how to apply thesetheories practically in different situations of the economy
- Know about the behaviour of goods market, money market, bondmarket in the economy
- Apply the fiscal policy and monetary policy or mixed policy based ondifferent economic situation
- Analyse and Compare different macroeconomic variables fordifferent countries
- Apply knowledge of different macroeconomic theories in the healthsector

Course contents:

Classical theory: Classical System (I) The classical revolution, production and employment according to classical theory, derivation of vertical AS curve.Classical System (II) Quantity theory of Money

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Keynesian theory: Simple model of determination of equilibrium income (the autarky economy without government), inventory investment,consumption and savings function, multiplier, effects of fiscal and monetary policies the autarky economy with govt.), balanced budget multiplier.

Interest rate determination: The demand for money; transaction, precautionary and speculative demand, interest rates and bond prices, supplyof money, money market equilibrium.

The IS-LM Model: Equilibrium in the commodity market: The IS curve, equilibrium in the money market; the LM curve, the money multiplier, demand for money-liquidity preference theory; derivation of the IS and LM curves, impacts of contractionary and expansionary monetary and fiscal policy on the IS and LM curve, crowding out effect, liquidity trap; derivation of aggregate demand curve and prices; aggregate supply, classical Vs Keynesian theory

Growth theory: The Economy in the very long run- impact of capital accumulation, Population, growth and technological change

References:

1. Blanchard, O. Macroeconomics, 7th edition, Pearson, 2017
2. Shapiro, E. Macroeconomic Analysis, Galgotia; 1990.
3. Dornbusch, R. & Fischer, S., Macroeconomics, McGraw Hill.
4. Froyen, R. T., Macroeconomics: Theories & Policies, 10th edition,Macmillan, 2013.
5. Branson, W.H. Macroeconomic Theory and Policy, 2nd Edition; 1989.
6. Taslim, M. A., and Anis Chowdhury. Macroeconomic analysis forAustralian students. Prentice Hall, 1995
7. The Report on Macroeconomics and Health: Investing in Health forEconomic Development, WHO Report, the WHO Commissions on Macroeconomics and Health.

HE 203: Techniques of Planning and Management Decision Analysis

Course objectives are to:

- Make enable the learner to set an objective considering the economic constraints
- Introduce to the techniques that efficiently applies all factors towards the achievement of the desired objective
- Familiarize with the process to solve different types of decisionproblems linked to health sector

Learning outcomes:

Upon completion of the course, the learner will be able to:

- Formulate linear programme to solve different decision problems dealing with various types of constraints
- Evaluate various techniques to determine network optimization problems related to health sector
- Make decisions under different situations or having different levels of information

Course contents:

Linear Programming: Decision problems, formulating a decision problem into a linear programme, solving linear programming graphically, infeasibility, unboundedness and redundant constraints.

Duality and Sensitivity Analysis in Linear Programming: Duality, solving the dual using the solutions of the primal, sensitivity analysis.

Network Analysis: Network optimization problems, representing the problem as a network, formulating the problem as a linear programming, the maximum-flow problem, Fictitious nodes: solving transportation problems, maximin objective function. **Integer Programming and Goal**

Programming: Formulating an Integer linear programming (ILP), solving an ILP, goal programming; target values and penalties, formulating the goal programming.

Single Stage Decision Problems: Structuring decision problems., solving decision problems, taking account of attitude to risk, some problems with expected utility theory.

Multi-Stage Decision Problems: Multi-stage decision problems, the value of perfect information, expected value with perfect information, sensitivity analysis, the value of experimental information: Prior analysis, revising priorprobabilities, expected value of experimental information, sensitivity analysis.

Decision Making Using Sample Information: Decision making with the proportion, decision making using the normal distribution. Decision theory and traditional statistics.

Markov process, Simulation. Activity Analysis.

References:

1. Lapin, Lawrence L. Quantitative methods for business decisions: withcases. Wadsworth Pub Co, 1994.
2. Shogan A W. Management Science, Prentice Hall, 1988.
3. Williams, HP. Model Solving in Mathematical Programming, Wiley,1993
4. Williams H P. Model Building in Mathematical Programming (3rdEdition), Wiley, 1995

HE 204: Public Economics

Course objectives are to:

- Provide a better understanding of the role of public sector
- Evaluate different government policy
- Designing optimal tax and expenditure for the government

Learning outcomes:

Upon successful completion of the course students will be able to:
- Describe the major items of government revenue and expenditure
- Compare explanations for government intervention
- Demonstrate why competition is efficient

- Explain the sources of market failure and potential policy responses
- Discuss the design of the tax structure using the concepts of efficiency and equity
- Describe how the level of government expenditures is determined
- Demonstrate how the interaction between jurisdictions affects the choice of policy
- Employ economic analysis to evaluate policy proposals.

Course contents:

The public sector in a mixed economy: The economic role of government, what or who is the government, thinking like a public-sector economist, disagreements among economists

Market efficiency: The invisible hand of competitive market, welfare economics and pareto efficiency, analysing economic efficiency

Market failure: Property rights and contract enforcement, market failures and the role of government, redistribution and merit goods, two perspectives on the role of government

Tax incidence and optimal taxation

Efficiency and equity: Efficiency and distribution trade-offs, analysing social choices, social choice in practice, three approaches to social choices, alternative measured of inequality- the Lorenz curve, the Dalton-Atkinson measure

Public goods and publicly provided private goods: Public goods, publicly provided private goods, efficiency conditions for public goods, efficient government as a public good, the leftover curve, measuring the welfare cost of user fee

Public choice: Public mechanisms for allocating resources, alternatives for determining public goods expenditures, politics and economics

Public production and bureaucracy: Natural monopoly- public production of private goods, comparison of efficiency in the public and private sectors, sources of inefficiency in the public sector, corporatization, a growing consensus on government's role in production

Externality and the environment: The problem of externalities, private solutions to externalities, public sector solutions to externalities, protecting the environment- The role of government in practice

Health care: Rationale for a role of government in the health care sector, reforming health care

Social Insurance: The social security system, social security, private insurance and market failures, should social security be reformed, reforming social security

Welfare programs and the redistribution of income: Rationale for government welfare programs, analysis issues, welfare reform- integration of programs

Education: Why is education publicly provided and publicly financed, issues and controversies in education policy, aid to higher education, how should public educational funds be allocated

Government expenditure and financing of Bangladesh

References:
1. Browning E.K. and J.M. Browning public Finance and the PriceSystem 3rd Edition, McMillan and Company, 1987.
2. Collis J. and P. Jones Public Finance and public Choice; Analyticalperspective.
3. Rosen H.S. Public Finance 2nd edition RD Irwin, 1988
4. Stiglitz, J.E. Economics of Public Sector, 2nd edition, New York: WWNorton 1998
5. Musgrave, R.A. The Theory of public finance: A Study in PublicEconomics, 1959.
6. Browning, E.K. and J.M. Browning, Public Finance and the PriceSystem, 3rd Edition, McMillan and Company, 1987.
7. Stiglitz, J. &J.K. Rosengard. Economics of the Public Sector, 4thedition. W. W. Norton & Company, 2015.
8. Hindriks , J. &G.D. Myles, Intermediate Public Economics, 2ndedition, MIT Press, 2013
9. Anderson, J.E. Public Finance: Principles and Policy, 1st edition,South-Western College Pub, 2002.

Fourth Semester

HE 205: Economics of Health Care I

Course objectives:

General objective of this course is to give an introduction to theories and methods of Health Economics and how they could be appliedto analyze the functioning of health system and the determinants of health and use of health services.

Learning outcomes:

Upon successful completion of the course a student will be able to:

- describe how health care is different from other economic goods
- explain theories of market justice and social justice and how they apply to health care
- identify and explain economic concepts and theories related to the behavior of economic agents, markets, and firm structures, social norms and government policies in the field of health care
- apply economic concepts and models to the fields of demand for health, demand for health services, demand for health insurance, provision of health insurance and provision of health care
- describe the role of health policy in shaping incentives for consumers and providers

Course contents:

Introduction to Health Economics: Definition of Economics, causes of market failures and need for health economics, definition of health economics, the history of health economic thought, the scope and importance of health economics, factors accounting for the growth of health economics, important

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institutional features of health care

Demand for Health Care: Demand, profits and health policy targets, consumer choice theory, demand functions, modelling choices about health, needs, wants, demands, asymmetry of information and imperfect agency, aggregate demand for health care

Production and cost of Health Care: The theory of production, Multi- product firms, returns to scale, additivity and fixed factors, costs

Supply of Health care: Firms, markets and industries in the health care sector of the economy, structure, conduct and performance in health care industry, profit maximization models, goals other than profit maximization

Markets, Market failure and the Role of Government in Health Care: Using perfectly competitive markets to allocate resources, market failures in health care (externalities, caring externalities, market power, public goods,information imperfections), government intervention in health care,government failure

Agency relationship and supplier induced demand: Agency relationship and Information asymmetry, market for lemons, Imperfect agentand supplier induced demand (SID), different models of supplier induced demand

Macroeconomics and health: Investing in health, the relationshipbetween ill health and poverty

References:
1. A.J.Culyer and J.P. Newhouse. North-Holland Handbook of HealthEconomics, Elsevier,2000.
2. Arrow K. Social Choice and Individual Values,1975.
3. S. Folland, A.C. Goodman and M. Stano, The Economics of health andhealth Care, Macmillan (3rd edn), 2000
4. W. Jack , Principles of Health Economics for Developing Countries,World Bank Institute, 1995.
5. S Morris, J Appleby, and D Parkin, Economic Analysis in HealthCareLeeK. and Mills A. The Economics of Health in Developing Countries. Oxford. Oxford University Press, 1983
6. McGuire A., Henderson J., Mooney G. The Economics of Health Care:an introductory text. London, Routledge and Kegan Paul, 1988
7. Mills a. and Gilson L. Health Economics for Developing Countries: ASurvival Kit, 1988.
8. P. Zweifel and F. Breyer. Health Economics, O.U.P., 1997.
9. Drummond M F, Sculpher M J, Claxton K, Stoddart G L, Torrance GW (4th edn) , Methods for the Economic Evaluation of Health Care Programmes. Oxford University Press, 2015.
10. Sloan F A, Hsieh C R, , Health Economics. MIT Press, 2015.
11. Gottret P,Schieber G. Health Financing Revisited: A Practioner'sGuide. The World Bank, 2006.
12. Soeg S H , The Economics of Risk and Insurance, Wliey- BlackwellPublication, 2010.

HE 206: *International Economics*

Course objectives:

This course offers an introduction to the main theoretical tools and policies that are central to the study of international economics but with an emphasis on application to trade flows, trading blocks and international macroeconomic events that characterize the global economy today. The course relies predominantly on a standard collection of international trade models to understand the motivations behind modern trade policies. The objective of this course is to build the ability to useeconomic analysis to reach a deeper understanding of international trade.

Learning outcomes:

At the end of the course, the student should be able to:

- Compare at the level of formal analysis, the major models of international trade and be able to distinguish between them interms of their assumptions and economic implications
- Identify benefits and limitations of free trade and how globalmarkets work
- Use relevant economic principles to articulate insights into policy issues related to specialisation, trade protectionism, foreign exchange market and balance of payments
- Identify major recent developments in the world trading system andbe able to critically analyse key issues raised both by the current round of WTO negotiations and by the spread of regional trading arrangements.

Course contents:

The basics of international trade: The absolute advantage theory – comparative advantage theory of opportunity cost, gains from trade as explained by a comparison of production and consumption possibilities frontiers under different international prices.

Trade theories: The Heckscher – Ohlin Trade Model, relationship between factor richness and specialization in production, factor intensities of imports and exports as expected on the basis of relative availability of the factors of production, the Leontief Paradox, factor price equalization between trading countries under conditions of partial and complete specialization in production.

The offer curve: Import-export possibilities as expressed through offer curves and the determination of international equilibrium through the use of offer curves.

Terms of Trade: Conceptual Issues; trends in terms of trade experienced by developed industrialized countries and the less developed agricultural countries, the strategy of import substitution, as against the strategy ofexport promotion, for the attainment of development by less developed countries.

The theory of protection: Tariffs in a partial equilibrium setting, impact oftariff on domestic production, prices, imports and consumption, effect of tariffs on income distribution, tariffs and terms of trade, preferential trading arrangements among countries, various types of integration, the theory of customs union, static and dynamic effects, trade creation and trade diversion,rationale for regional trade agreements among developing countries, discussion on recent WTO negotiations.

Balance of payments and financial issues: Elements in the current account, balance of payments on current account, elements in the capital account, autonomous transactions, deficit and surplus in current account,accommodating transactions and the overall balance.

Foreign trade and national income

Market for Foreign Exchange: Demand and Supply of foreign exchange,fixed and flexible exchange rates.

Trade in health services Trade issues of Bangladesh

References:
1. Krugman, Paul R. International economics: Theory and policy, 8/E.Pearson Education India, 2008.
2. Sodersten, Bo, and Geoffrey Reed. International Economics, St.Martin's Press, New York, 1980.
3. Miltiades Chacholiades, International Trade theory and Policy,McGraw-Hill Inc, 1980.
4. R.E. Caves and R.W. Jones, World Trade and Payments, Little –Brown, 2007
5. Trade in Health Services: Global, Regional and Country Perspectives. Washington DC: Pan American Health Organization, Program on Public Policy and Health, Division of Health and Human Development,2002

HE 207: Public Health

Course objectives are to:

- Provide some basic understanding of public health issues, and itsrelevance to health economics
- Orient students with the public health system of Bangladesh

Learning outcomes:

Upon successful completion of the course students will be able to:

- Familiarize with public health concepts and different public healthorganizations
- Distinguish between public system of Bangladesh with other countries
- Critically evaluate national health and other related policy

Course contents

Introduction: Historical background of health and Public health, concept of health and public health, Some basic definitions in public health, public health definition and models, essential public health functions (WHO)

Determinants of Health: Different types of indicators.

Health for all (HFA): Primary Health Care, Concept and components, Essential Services Package (ESP). Bangladesh ESP development process for 2016-2021.

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Line director wise health services provided and programs implemented by Ministry of Health and family welfare, Bangladesh

Public sector Health care delivery systems; community level, ward level,union level

First referral services provided by Thana Health Complex Second referral services

provided by District Hospital

Final referral services through National level tertiary Hospital

Public sector funding; expenditure management of revenue budget, expenditure management of annual development budget (ADP), donor funding to the health sector, funding of projects through the development budget, funding of public sector activities outside the Government budget.

Public Sector Human Resources; Manpower of the Ministry of health, DGHS, physicians, medical officer, dentists, consultant/specialist, mid-level health manpower, medical assistants, nurse/midwives, sanitary inspector and health inspector, health technicians, health assistants, family welfare assistance, family welfare visitors, CHCP

Health care planning in Bangladesh Health systems of different countries

References:
1. David E Lilienfeld, Paul D. Stolley. Foundation of Epidemiology.Oxford University Press, 1994.
2. Leon Gordis . Epidemiology. WB Saunders Company, 1996.
3. MOHFW. Health and Population Sector Programme, 1998-2003, 1998
4. MOHFW. Conceptual Framework for Health Nutrition and PopulationSector Programme 2003-2006, 2003.
5. Park and Park. A textbook of Public health (6th Edition), 2000.
6. Rashid, Khabir, Haider. A text Book of Public Health (3rd Edition),2000.
7. Selim Reza. Public Health, 2000

HE 208: Labour Economics

Course objectives are to:

- Develop the skill of applying modern economic principles (mainly micro) to the analysis of labour markets.
- Understand the wage determination, potential sources of wage differentials and discriminations in the labour market.
- Familiarize with the economic tools of marginal benefit, marginal cost analysis to explain how employers and employees behave underdifferent institutional conditions.
- Explain and evaluate the short run and long run impact of labour market regulations such as minimum wage laws, and unions.
- Understand the cause of labor migration, its impact on labour market,and policy options.
- Understand the relationship between risk of injury, wage andemployee benefits layoffs.

- Develop the knowledge of the empirical evidence on labour marketrelationships, and the ability to interpret and evaluate that evidence.
- Familiarize with the basic structure of the labor market ofBangladesh.

Learning outcomes:

On successful completion of this course students should be able to:

- Demonstrate an understanding of basic labor economics theory,including labor market structures and wage determination.
- Apply their understanding of theoretical models to analyze trends in data pertaining to topics in labor economics.
- Construct, defend, and analyze important labor policy issues.
- Use the basic analytical tools employed in modern labour economics.
- Comprehend, assess, and criticize existing empirical work in laboreconomics.

Course contents:

Introduction: The labor market; some basic concepts of labor economics; importance of studying labor economics; positive and normative economics; micro and macro labor economics.

The functioning of the labour market: The labour market; labour force participation: concept, measurements, trends, Unemployment and under- employment: concept and measurements, the demand for labour, the supply of labour; the determination of wage, applications of the theory.

The demand for labour: Profit maximization, labour demand in the competitive labour market, the short-run demand for labour, labour demand in the long run, monopsony in the labour market, policy application: effects of employer payroll taxes and wage subsidies.

Labour demand elasticities: The own-wage elasticity of labour demand, the cross-wage elasticity of labour demand, policy application: effects of minimum wage laws; applying concepts of labour demand elasticity to the issue of technological change, international trade and the demand for labour, gains from trade and labour market implications.

Quasi-fixed labour costs and their effects on labour demand: Nonwage labour costs, the employment/hours trade-off, Policy analysis: The over-time pay premium, part-time employment and mandated employee benefits; firms' labour investments and the demand for labour; the multiperiod demand for labour; general and specific training; hiring investments.

Supply of labour: A theory of decision to work, analysis of the labour/ leisure choice, policy applications: budget constraints with spikes, programs with netwage rates of zero, subsidy programs with positive net wage rates, monetary and time costs of working, the theory of household production, choice of household work, market work, and leisure, joint labour supply decisions withinthe household, life-cycle aspect of labour supply, policy application: child care and labour market.

Compensating wage differentials: Job matching, Hedonic wage theory and the risk of injury and employee benefits layoffs.

Investments in human capital: Education and training: The basic model; the demand for higher education; post schooling investments; cobweb model of labour market adjustments; signaling model;

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hedonic model of earnings and educational level

Worker mobility: Migration and turnover, the determinants of worker mobility, geographic mobility, Policy application: Restricting immigration, employee turnover and job matching

Pay and Productivity: Motivating workers, productivity and the basis, level and sequencing of pay, Application of the theory: Why do earnings increase with job tenure? Why do large firms pay more? Monopsonistic behavior by employers.

Discrimination in the Labor Market: Measured and unmeasured sources of differentials in earnings, theories of market discrimination, government interventions to end discrimination.

Unions and the labor market: Union structure and membership;constraints on the achievement of union objectives, activities and tools of collective bargaining, the theory of union wage effects.

Inequality in Earnings: Measuring inequality, underlying causes of inequality, Lorenz Curves and Gini Coefficients.

The labour economics of Bangladesh: Labour market issues in developing countries including Bangladesh, seasonality in agriculture, different types of labour contracts, market imperfections, division of labour by gender, child labour,employment and wage determination in Bangladesh, history of wage setting institutions, wage growth and productivity, trends in employment and unemployment, formal and informal sector employment, education and manpower, privatization and labor market, labour market policies.

References:

1. Ehrenberg, R. and R. Smith, Modern Labor Economics: Theoryand Public Policy, 9th edition, Addison Wesley, 2006
2. Cahue, P. and A. Zylberberg, Labor Economics, MIT Press, 2004
3. Borjas, G., Labor Economics, 2nd edition, McGraw-Hill, Boston, 2002
4. Ashenfelter, O. et al (eds.), Handbook of Labor Economics, 1999.
5. Bosworth, D., P. Dawkins and T. Stromback, Economics of the LabourMarket, Financial Times Press, 1997
6. Social Dimensions of Economic Reforms in Bangladesh, Proceeding ofthe National Tripartite Workshop, ILO-ARTEP, 1993.
7. Rahman, Mashiur, Structural Adjustment, Employment and Workers: Public Policy Issues and Choices for Bangladesh, UniversityPress Limited, 1994.
8. Khuda, B. ―Estimation of Potential Supply of Labour in a Rural Agrarian Society‖, The Bangladesh Development Studies, Vol. VII,No.1, 1979, Dhaka.
9. Khuda, B. ―Measurement of the Economically Active Population: AnAlternative Approach‖, The Bangladesh Development Studies,Vol.VII, No.4, 1979, Dhaka.

Fifth Semester

HE 301: Microeconomics II

Course objectives are to:

- explain the conditions of profit maximization;
- describe the conditions of utility maximization and welfare evaluation through consumer surplus, equivalent variation and compensating variation; explain consumer choice under uncertainty; and intertemporal choice
- give examples of different models of duopoly and oligopoly;
- introduce game theory.

Learning outcomes:

At the end of this semester, students will be able to:

- apply the profit maximizing conditions under different technologies
- derive the Marshallian and Hicksian demands; and get clear idea about consumer choice;
- apply duopoly and oligopoly models in real life problems;
- familiar with the basic concepts of game theory.

Course contents:

Producer Theory: Production Technology (Cobb-Douglas, Leontief, CES), profit Maximization, profit functions and supply, cost minimization and conditional factor demands, Duality—Technology and Costs

Consumer Theory: Preferences and utility, consumer choice and Marshallian demand, expenditure functions and Hicksian demand, Duality—utility and expenditure, Slutsky Equation, integrability, inverse demand (example from health sector).

Duopoly and Oligopoly: Curnot's duopoly model, Bertrand's duopoly model,Chamberlin's oligopoly model, Sweezy's non-collusive stable equilibrium (the kinked-demand model), Stackelberg's duopoly model Collusive Oligopoly: Cartels

Game Theory: The payoff matrix, Nash equilibrium, Mixed strategies, Theprisoner's dilemma, repeated games, sequential games

Consumer Demand Topics: Welfare evaluation of economic changes toconsumers—consumer surplus, equivalent variation and compensatingvariation, revealed preference-weak and strong axioms, aggregation
Consumer Choice under Uncertainty

Intertemporal Choice

Partial Equilibrium, Efficiency and Welfare: Comparing competitiveand monopoly outcomes

References:

1. Jehle, G.A. and Reny, P.J. Advanced Microeconomic Theory, 2ndEdition, Addison Wesley; 2000.

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2. Varian, H.R. Intermediate Microeconomics: A Modern Approach, 7thEdition; WW Norton & Co; 2007
3. Varian, H.R. Microeconomic Analysis; 3rd Edition, 2009.
4. Perloff, Jeffrey M. Microeconomics: theory and applications withcalculus. Pearson Higher Ed, 2017.
5. Nicholson, Walter, and Christopher Snyder. Microeconomic theory:Basic principles and extensions. Nelson Education, 2011.

HE 302: *Techniques of Economic Evaluation of Health Care I*

Course objective is to:

- Provide definitions of different types of economic evaluations andtheir strengths and weakness

Learning outcomes:

Upon successful completion of the course students will be able to:
- Figure out the possible alternatives of economic evaluation
- Distinguish among the economic evaluation tools and their strengths and weaknesses

Course contents:

Introduction: Need for public sector interventions, efficiency of healthservice delivery, importance of economic evaluation of health care

Techniques of Economic Evaluation: Partial economic evaluation and full economic evaluation, Different techniques of economic evaluation

Cost Analysis: Selection of cost, estimation of cost, top down and bottom-upapproach, discounting and annuity factor, cost minimization analysis

Cost Effectiveness Analysis: Definition, when we should conduct cost effectiveness analysis? Average cost effectiveness ratio, incremental cost effectiveness ratio

Cost Utility Analysis: What is cost utility analysis? When should we conduct cost utility analysis? Differences between cost effectiveness analysis and cost utility analysis, measuring health outcomes under cost utility analysis, Quality Adjusted Life Years (QALYs), Disability Adjusted Life Years (DALYs)

Cost Benefit Analysis: Concept of cost benefit analysis, measuring benefits under cost benefit analysis; Direct, indirect and intangible benefits, Willingness-to-pay surveys, Ranking alternatives under cost benefit analysis

References:

1. Drummond M F, Sculpher M J, Claxton K, Stoddart G L, Torrance GW (4th edn). Methods for the Economic Evaluation of Health Care Programmes. Oxford University Press, 2015.
2. F. A. Sloan (ed.), Valuing Health Care, Cambridge University Press,1995.
3. M. R. Gold, J. E. Seigel, L. B. Russell, and M. C. Weinstein (eds.), Cost-effectiveness in Health and Medicine, Oxford University Press, 1996.

4. P. Jacobs, The Economics of Health and Medical Care, AspenPublishers, Inc. Gaithersburg, Maryland, 1991.
5. Mills A, and Gilson L. Health Economics for Developing Countries: ASurvival Kit. EPC Publication no. 17, Summer 1988, Health Policy Unit, LSHTM, 1988.
6. Zschock D K Health Care Financing in Developing Countries, 1983.
7. A.J.Culyer and J.P. Newhouse North-Holland Handbook of HealthEconomics, Elsevier. Arrow K. (1975) Social Choice and IndividualValues, 2000.
8. S Morris, J Appleby, and D Parkin, Economic Analysis in Health Care
9. Sloan F A, Hsieh C R. Health Economics. MIT Press, 2012.
10. Gottret P,Schieber G. Health Financing Revisited: A Practioner'sGuide. The World Bank, 2006.
11. Soeg S H, The Economics of Risk and Insurance, Wliey- BlackwellPublication, 2011

HE 303: Econometrics I

Course objectives are to:

- Provide an overview of econometric methodology
- Deliver an introduction to econometric techniques, examining both their theoretical justifications and limitations, and their practical application
- Provide an understanding of how econometric techniques may be applied to investigate issues in economic theory

Learning outcomes:

By the end of this course it is expected that students will

- know the basic principles of econometric analysis

- be able to understand both the fundamental techniques and widearray of applications

- be able to understand the assumptions that underpin the classical regression model

- know how to apply regression analysis to real-world economic examples and data sets for hypothesis testing and prediction

Course contents:

Introduction to Econometrics: Definition of econometrics, Why a separate discipline? Methodology of econometrics, types of econometrics, understanding econometric modelling, use of econometrics for social scientists and business executives, regression as main tool of econometrics.

Two Variable Regression Model: Population regression function, the significance of the stochastic disturbance term, the sample regression function, the role of statistical packages for econometric study.

Estimation Two Variable Regression Model: The method of ordinary least squares (OLS), the basic assumption underlying the method of OLS, theproperties of least squares estimators; Gauss Markov Theorem, standard error of the estimates, estimator of the variance of the disturbance term, coefficient of determination, some illustrative examples of the two variable regression models.

Classical Normal Linear Regression Model (CNLRM): Normalityassumption of the disturbance term, why the normality assumption? Properties of OLS estimators under normality assumption, the method of

maximum likelihood (ML),

Two Variable Regression: Interval Estimation and hypothesis testing, the chi-square, t distribution and F distribution, hypothesis testing, confidence interval approach & test of significance approach.

Extensions of the Two Variable Linear Regression Model: Regression through the origin, scaling and units of measurement, different functional forms of regression models (double log model, semi-log, reciprocal model and the logarithmic reciprocal model), interpretation of estimated parameters, measurement of elasticity.

Estimation of Multiple Regression Model: The matrix approach to linear regression model, assumptions of classical linear regression model in matrix notation, OLS estimation, variance covariance matrix of the estimators, R square and adjusted R square, hypothesis testing of equality of two regression coefficients, restricted least squares, testing for structural orparameter stability of regression models: the Chow test, testing the functional form of regression; choosing between linear and log-linear regression models, forecasting with multiple regression.

Consequences of violating the assumptions of CLRM: Nature of multicollinearity, nature of heteroscedasticity and nature of autocorrelation.

Demonstration of Statistical Packages for Social Sciences (SPSS) /Econometric Views/STATA/R

References:

1. Wooldridge, Jeffrey M. Introductory econometrics: A modern approach.Nelson Education, 2015.
2. Griffiths, William E., R. Carter Hill and George G. Judge: Learningand Practicing Econometrics, John Wiley & Sons, New York, 1993.
3. Gujarati, D.N.: Basic Econometrics,4th Edition, McGraw HillPublications,2003.
4. Pindyck, R.S., and D.L. Rubinfeld.: Econometric Models and Econometric Forecasts 4th Edition, Irvin McGraw Hill, 1998.
5. Johnston, J.: Econometric Methods, 3rd edition, McGraw Hill, NewYork, 1984.
6. Kmenta, Jan: Elements of Econometrics, 2nd edition, Macmillan, NewYork, 1986.
7. Koutsoyiannis. A.: Introductory Econometrics, Harper & Row, NewYork, 1973.
8. Maddlala, G.S.: Introduction to Econometrics, John Wiley & Sons, NewYork, 1970.
9. Andrew M. Jones, Health Econometrics, University of Y

HE 304: Accounting & Finance

Course objectives are to:

- Orient students with basic tools of accounting and finance
- Gain the skill of understanding of financial market, and the accounting procedure

Learning outcomes:

Upon successful completion of the course students will be able to:

- Critically analyse the financial statement (Cash flow, balance sheet,income statement etc.)
- Use of tools in valuating financial instruments
- Evaluate efficiency level of financial market of Bangladesh
- Apply basic principles of accounting and accounting procedures

Course contents:

A: Accounting

Accounting in action: What is accounting, users of accounting information,generally accepted accounting principles, basic accounting equation, effects of transactions on accounting equation

The recording processes: The accounts, debits and credits, double entry system, steps in recording process, the journal and ledger, the trial balance

Completion of the accounting cycle: Preparation of work sheet, adjusting entries, preparing financial statements

Accounting for merchandising operations: Merchandising transactions recording purchases and sales and related transactions, determining cost of goods on hand, computing cost of goods sold, gross profit, inventory system

Company's Income Statement and Balance Sheet and Cash flow Statement: Format of income statement - Classification in the balance sheet- usefulness of the statements of cash flows - classifications of cash flows, significant non cash activities - preparing the statement of cash flows - directand indirect methods.

Basic cost accounting concepts: Costing methods - techniques - costaccounting cycle - cost sheet - cost accounting systems - journal voucher control system - impact of automation on cost accounting historical - development of cost accounting.

Costing Method/techniques: Job costing for planning and control of services- recording under job order costing and determination of job cost - jobcosting and spoilage - demands for activity based costing - introduction to process costing - 5 step method of process costing - equivalent units - weighted average and FIFO, loss of units - normal vs. abnormal loss.

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Introduction to Managerial Accounting: Managerial accounting and the business organizations – understanding cost behavior – cost-volume-profit analysis.

Budgetary Planning and Control: Budgets and the organizations –financial planning model – preparing master budget, flexible budget –budgetary control and responsibility accounting.

B. Finance

Introduction: Goals and functions of business finance; The financial manager; objectives of financial management- business ethics - the agency problems - markets and institutions: The financial markets - types of markets, primary markets vs. secondary markets - financial institutions - thestock market - fiscal environment

Concepts in Valuation: Time value of money - future value and compounding - present value and discounting, opportunity cost rate, future and present values of an annuity, perpetuities - amortized loan andamortization schedule

Concepts of Return and Risk: Uncertainty, risk and return; risk-free andrisk-adjusted return - bond returns - return from a stock investment - types of risks: business risk and financial risk, total risk and specific risk, diversifiable risk and systematic risk, single-asset risk and portfolio risk - risk measurement - variance, standard deviation and coefficient of variation

Valuation of Financial Instruments: Valuation of bond and debenture -valuation of preferred stock - valuation of common stock - discounted valuation models - relative valuation models.

Sources of Financing and Instruments used therein: Assessing the suitability of different financing options for a given business - short-term financing - intermediate-term financing - long-term financing - factors affecting a company's choice of finance - financing problems of small firms -capital market efficiencies.

Cost of Capital: Capital components and their costs - calculating and interpreting the costs of different financing methods - cost of debt, cost of preferred stock, cost of common equity, cost of retained earnings - capm approach, bond- yield-plus-risk premium approach, dividend-yield-plus- growth-rate, or Discounted Cash Flow (DCF) approach - cost of newly issued common stock or external equity - Weighted Average Cost of Capital (WACC),Marginal Cost of Capital (MCC) - MCC schedule, break points; factors affecting the cost of capital.

Capital Budgeting: Introductory knowledge about capital budgeting –methods and techniques of evaluation of different projects.

Financial Market of Bangladesh

References:

1. Weygandt, Jerry J; D.E. Kieso and P.D. Kimmel. AccountingPrinciples, 12th Edition, John Wiley and Sons, Inc, 2015.
2. Geoff Black, Introduction to Accounting and Finance. 1st Revisededition, Prentice Hall, 2005.
3. Horngren C.T; DatarS.M. and Rajan M. Cost Accounting: AManagerial Emphasis, 14th ed. Prentice-Hall, 2012.

4. Brigham, Eugene F. and Joel F. Houston, Fundamentals of FinancialManagement, (Thomson SouthWestern)
5. Weston J.F. and E.F. Brigham, Essentials of Managerial Finance
6. Ronald W. Melicher& Edgar A. Introduction to Finance: Markets, Investments, and Financial Management, 15th edition, Wiley. 2013

Sixth Semester

HE 305: Mathematics III

Course objective:

This course provides the basics for solving dynamic optimization problems in economic models. In particular, it would introduce the mathematical tools required for graduate courses in economics including control theory and dynamic programming, both in discrete and continuous time. Throughout the course, the optimization problems are illustrated using various examples for example the cobweb model of price adjustment and the Solow growth model.

Learning outcomes:

After completion of this course, students will be able to:

- Solve difference and differential equations.
- Draw phase diagrams and analyze long-term forecasts.
- Derive solution for constrained dynamic optimization problems

Course contents:

Basics of real analysis: Sets; algebra of sets, families of sets, cartesian product, binary relations, matrix space; open, closed, compact, connected sets,continuity, concept of limits

Applied matrix operations: Characteristic equations, eigenvalues and eigen vectors.

First-order Difference Equations: Solving First-order Difference Equations, dynamic stability of equilibrium, qualitative and graphical approach to non-linear difference equations.

First-Order Differential Equations: First-order linear differential equations with constant coefficient and constant term, dynamic stability, methods of solution;

Second order differential equation: Second-order linear differential equations with constant coefficient and constant term, dynamic stability, methods of solution.

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Simultaneous Differential Equations: Genesis of dynamic system,solving, dynamic input-output model with application, two variable phase diagram, linearization of non-linear differential equation system.

Dynamic Optimization: Optimal control theory, The Hamiltonian principle.

References:
1. Hoy, Michael, John Livernois, Chris McKenna, Ray Rees, and ThanasisStengos. Mathematics for economics. MIT press, 2011.
2. Chiang, Alpha C and Kevin Wainwright. Fundamental Methods of Mathematical Economics, 4th Edition, McGraw- Hill/Irwin, New York,2005.
3. Dowling, Edward T. Schaum's Outline Introduction to MathematicalEconomics, 3rd Edition, McGraw-Hill, 2011
4. Sydsaeter, Khut& Peter Hammond. Essential Mathematics forEconomic Analysis, 3rd Edition, Knut, Prentice Hall, 2002
5. Simon, Carl P., and Lawrence Blume. Mathematics for economists.Vol. 7. New York: Norton, 1994.
6. W. Rudin. Principles of Real Analysis. 1976
7. Rudin, Walter. Principles of mathematical analysis. Vol. 3. New York:McGraw-hill, 1964.

HE 306: Hospital Management

Course objectives are to:

- Describe the basic concepts of hospital management focusing on totalquality management of hospital and health-care services
- Provide basic insights into the organization of a hospital, functions of various departments of a hospital, the role of management staff, health care professionals, support and other staffs
- Develop skills and competencies for effectively managing man (human resource), money (financing) and materials of a hospital

Learning outcomes:

At the end of this course, the students will be able to:

- Understand the need and importance of cost effective sustainable healthcare through demand generation and enhanced quality care
- Develop and apply various employee friendly systems for effectivefunctioning of different administrative activities and support services of hospital
- Promote patient centred care with a continuous quality improvement orientation, ensure smooth functioning of core process by forecasting,streamlining patient flow, staff scheduling, planning space/ facilities/supplies, maintenance, etc.
- Ensure optimum utilization of available limited resources
- Sharpen managerial skills
- Have an appreciation on the use of information technology in thehospital

Course contents

History of the development of hospitals

Types, functions and services of hospitals, Basic principles for managing a hospital

Hospital planning and designing, Management of clinical and nursing services of a hospital

Management of support services of a hospital, Management of utility services of a hospital, Management of special services of a hospital

Medical record and hospital information system, Clinical governance and med audit Hospital infection control, Management of hospital waste

Qualitative and quantitative management in hospital,5S-Kaizen-TQM, Team building and paradigm shift of leadership in hospital management

Public private partnership in hospital management.

References:
1. Hospital Management by Prof. Jagmohon Negi First edition 2009.
2. Hospital Marketing Management by Robert D Reid 5th edition 2012.
3. Introduction to Hospital Management by John R Walker 2009.
4. Management Information System in Hospitals by A.K.Saini 1999reprint 2009.
5. Hospital Store Management: An Integrated Approach by Shakti Gupta& Sunil Kant 1st edition 2000.
6. Hospitals and Nursing Homes - Planning, Organisations andManagement by Dr. Syed Amin Tabish 2003.
7. HOSPITALS - Facilities, Planning and Management by G.D.Kunders.
8. Practical Handbook on HOSPITAL WASTE Management Dr. Capt.D.B.Acharya.
9. The Financial Management of Hospitals and Healthcare Organizationby Michael Nowicki 2007.
10. Hospital Management by Prof. AKM Salahuddin.
11. Management by Griffin.

HE 307: Econometrics II

Course objectives are to:
*   Explain the consequences, detection and remedial measures of multicollinearity;
*   Describe the consequences, detection and remedial measures of heteroscedasticity;
*   Present the theoretical and practical consequences of autocorrelation, detection and remedial measures of it;
*   Introduce the criteria of model specification, detail explanation of types and consequences of model specification and test of SEs;
*   Estimate the system of equations for OLS and GLS;
*   Introduce the concept of dummy variable and to interpret and to use it in different models;
*   Describe the simultaneous equation models, introduction and properties of IV estimators, two stage least squares, testing endogeneity and over identifying restriction.

Learning outcomes:

At the end of the course, students will be able to

- detect the problems of multicollinearity, heteroscedasticity and autocorrelation among different empirical models; andgo for remedial measures;
- present model selection criteria and methods of testing SEs, think about remedial measures;
- demonstrate the dummy variable regression models; estimate the systems of equations and simultaneous equation models;
- select IV and can apply them in empirical analysis

Course contents:

Multicollinearity: Nature of Multicollinearity, Is Multicollinearity really a problem? Practical consequences, detection and remedial measures of multicollinearity.

Heteroscedasticity: Nature of heteroscedasticity, consequences, detection and remedial measures of heteroscedasticity.

Autocorrelation: Nature of autocorrelation, theoretical and practical consequences of autocorrelation, detection and remedial measures of autocorrelation.

Specification Errors: Model specification criteria, types of specification errors: omission of relevant variable, inclusion of irrelevant variable, adopting a wrong functional form, errors of measurement; consequences of model specification errors, and tests of specification errors.

Error in the variable: Properties of OLS under measurement error, measurement error in dependent variable, measurement error in Independent variable, missing data and outlying observation (solution for measurement error)

Estimating System of Equations for OLS and GLS

Regression on Dummy Variables: Nature of dummy variables, regression with a mixture of quantitative and qualitative regressions: the ANOVA models, some illustrative examples of regressions on dummy variables, the structural stability of regression models/ comparing two regressions with dummy variable approach, interaction effects using dummy variables, use of dummy variables in seasonal analysis, piecewise linear regression.

Simultaneous Equation Models and Instrument Variable Estimator: The nature of simultaneous equation model, Simultaneity bias, IV estimator and its properties, concept of identification and conditions for identification, two Stage Least Square (2SLS), Statistical inference with IV estimator, testing endogeneity and over identifying restriction, 2SLS and heteroskedasticity.

References:

1. Wooldridge, Jeffrey M. Introductory econometrics: A modernapproach. Nelson Education, 2015
2. Griffiths, William E., R. Carter Hill and George G. Judge: Learningand Practicing Econometrics, John Wiley & Sons, New York, 1993.
3. Gujarati, D.N.:BasicEconometrics,4th Edition, McGraw Hill,2003

4. Johnston, J.: Econometric Methods, 3rd edition, McGraw Hill, NewYork, 1984.
5. Kmenta, Jan: Elements of Econometrics, 2nd edition, Macmillan,New York, 1986.
6. Koutsoyiannis. A.: Introductory Econometrics, Harper & Row, NewYork, 1973.
7. Maddlala, G.S.: Introduction to Econometrics, John Wiley & Sons,New York, 1970.
8. Andrew M. Jones, Health Econometrics, University of York

HE 308: Economics of Health Care I

Course objectives are to:

- Orient students with basic economic theory relevant for health sectors
- Provide explanation of different health care financing mechanisms,and provider payment mechanism
- Familiarize with NHA

Learning outcomes:

After completion of this course, students will be able to:

- Explain why government role is important for health care
- Designing a mechanism that work for health insurance
- Interpret the results of national health accounts

Course contents:

Introduction: Importance, need of health care, demand for health care,production of health care, health care financing, efficiency and equity

Demand for Health Care: Access and access barriers, health care seekingbehavior, medical tourism, Grossman model and its implications, determinants of demand for health care, social determinants of health

Market Failures and The Role of Government: Information asymmetries, externalities, affordability and deprivation for the demand of health care, Government intervention

Efficiency in Health Care Production: Technical, production andallocative efficiency, different methods of measuring efficiency

Provider Payment Mechanisms: Prospective payment mechanisms, retrospective payment mechanisms, per capita reimbursement, per case reimbursement, DRGs

Financing of Health Care: Concept, private finance of health care services, Government financing and private supply, public supply and financing, tax financed health care system, private health insurance, social healthinsurance, community health insurance, out of pocket payments, user fees, other non-traditional methods of health financing, medical saving schemes, contributions of developing partners, health care financing strategy of Bangladesh, equity in health care financing, horizontal and vertical equity, Kakwani index, Suit index

Health Care Financing and Universal Health Coverage: The concept of universal health coverage, the

path towards universal health coverage and its relation to health care financing

Economics of health insurance: Uncertainty in Health Care, attitude to risk, diminishing marginal utility of income, the demand for health insurance, risk pooling, the supply of health insurance, market for health insurance, health insurance market failures

Overview of National Health Accounts: What are NHAs? Classification of function, classification of provider, health financing schemes, financing agents, Bangladesh national health accounts

References:
1. Culyer, A.J. and J.P. Newhouse. North-Holland Handbook of HealthEconomics, Elsevier. Arrow K. (1975) Social Choice and Individual Values, 2000.
2. EPC Publication no. 17, Health Policy Unit, LSHTM.
3. Lee K. and Mills A. The Economics of Health in Developing Countries.Oxford. Oxford University Press. 1983
4. McGuire A., Henderson J., Mooney G. The Economics of Health Care:an introductory text. London, Routledge and Kegan Paul. 1988
5. Mills a. and Gilson L. Health Economics for Developing Countries: ASurvival Kit, 1988.
6. Zweifel, P. and F. Breyer. Health Economics, O.U.P. 1997
7. Folland S., A.C. Goodman and M. Stano. The Economics of health andhealth Care, Macmillan (3rd edn). 2000.
8. Jack W. Principles of Health Economics for Developing Countries,World Bank Institute, 1995.
9. F. A. Sloan (ed.) Valuing Health Care, Cambridge University Press.1995.
10. M. R. Gold, J. E. Seigel, L. B. Russell, and M. C. Weinstein (eds.), Cost-effectiveness in Health and Medicine, Oxford University Press,1996.
11. Drummond M F, Sculpher M J, Claxton K, Stoddart G L, Torrance GW (4th edn). Methods for the Economic Evaluation of Health Care Programmes. Oxford University Press,2015.
12. Sloan F A, Hsieh C R. Health Economics. MIT Press, 2015,
13. Gottret P,Schieber G. Health Financing Revisited: A Practioner'sGuide. The World Bank, 2006.
14. Roberts M J, Hsiao W, Berman P, Reich M R (1st edn). Getting HealthReform Right: A Guide to Improving Performance and Equity. Oxford University Press, 2008.
15. Soeg S H.The Economics of Risk and Insurance, Wliey- BlackwellPublication, 2010.

Fourth Year

Seventh Semester

HE 401: Techniques of Economic Evaluation of Health Care II

Course objectives are to:

- Orient students with advanced issues of economic evaluation, health impact assessment
- Discuss issues related to measurement of health outcomes and burden of disease
- Familiarize with environmental issue related to health

Learning outcomes:

After completion of this course, students will be able to:

- Use appropriate economic evaluation tool for various intervention
- Apply the techniques of measurement of health outcomes
- Calculate the burden of disease
- Perform sensitivity analysis of different intervention
- Evaluate environmental regulations

Course contents

Overview of economic evaluation

Measuring and valuing effects: Health gains, consumption benefits of health care, Emerging techniques of measuring burden of disease, Using clinical studies as a vehicle for economic evaluation, Economic evaluation using decision analytic modelling, Identifying, synthesizing, and analysing evidence for economic evaluation , Characterizing, reporting, and interpreting uncertainty

Health Impact Assessment: What Is Health Impact Assessment? Importance of Health Impact Assessment, Methods of Health ImpactAssessment, evidences on Health Impact Assessment.

Cost-Benefit Analysis: CBA decision rules, measures of welfare, economic impact analysis, cost-benefit analysis of social programs, Risk & Uncertainty, Indirect methods, contingent valuation, valuation of astatistical life (VSL) and statistical life-years (VSLY)

Environmental regulation, global warming

References:
1. Boardman, Greenburg, Vining, and Weimer.Cost-Benefit Analysis:Concepts and Practice, 4th edition Prentice Hall, 2010.
2. Johansson, Per-Olov, and Bengt Kriström. Cost-benefit analysis forproject appraisal. Cambridge University Press, 2015.
3. Mishan, Edward J., and Euston Quah. Cost-benefit analysis.Routledge, 2007.

HE 402: Environmental Economics

- Learn the central concepts of economic theories in environmental economics.
- Understand the concepts of externalities, public goods and efficiency.
- Learn Markets and market failure and how markets allocate goods and why they sometimes fail allocate environmental goods optimally.
- Learn the determinants of optimal pollutions and pollution control policy.
- Understand the relationship between pollution and health outcome.
- Valuing the cost of pollution and benefit from controls.
- Develop the concepts of occupational health related to environment.
- Learning the environmental issues of Bangladesh.

Learning Outcomes

Upon successful completion of this course, students should be able to:

- Understand how various market failures may lead to environmental degradation or the overexploitation of natural resources.
- Recognise the role of economic activity in environmental damage and economic concepts and ideologies are used to enable or justify environmental damage.
- Recognise the local and global economic response to environmental damage, including from governments, industry, individuals and non-government organisations.
- Determine the linkage of environmental policy with population health in Bangladesh.
- Recognise   the efficacy of the existing environmental protectionpolicy in Bangladesh.

Course contents:

Analytical Foundation of Environmental and Resource Scarcity: Defining environmental and resource economics, the concept of resources andresource scarcity, the neo-classical economic perspective
The Concept of Natural Resources: An Ecological Perspective: Ecology: The economics of nature, the ecosystem; structure and function, eco dynamics; succession, equilibrium, stability, resilience, complexity, the laws of matter and energy, the basic lessons of ecology

Natural Resource Scarcity and the Limits to Economic Growth: The Malthusian growth doctrine, the Neoclassical growth paradigm, the ecological economics school perspective, sustainable economic development

The   Origins   of   the   Sustainability   Problem: Scoping and defining sustainability and intergenerational equity, economic growth with depletable resources and/or pollution, measurement of sustainability and income; theoryand empirics, environmental   and sustainability   policies, national sustainability policies in practice

Ethics   and   Environment: Ethical foundations for environmental economics, principles of discounting.

Fundamentals of the Economics of Environmental Resources: The economic process and the assimilative capacity of the natural environment, common property resources, externalities and market failure, internalizing externalities; the Pigouvian tax

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The Economic Theory of Pollution and Its Control: The determinants of the optimal level of pollution and their Implications, alternative pollution control policy measures and their implications for growth and equity.

Valuing the Environment: Measuring the costs of provision, total economic value, benefits of improving an environmental amenity, methods; productivity loss, defensive, mitigating, travel cost, hedonic and contingent valuation, valuation and policy relevance

Introduction to Environmental Health

Occupational Health Environmental issues of Bangladesh

References:
1. Hartwick. J. M. and Olewiler, N.D. The economics of natural resourceuse. Harper and Row, New York, 1998.
2. Pearce, D. & Turner, R.K. Economics of natural resources and theenvironment. Harvester Wheatsheaf, 1990.
3. Perman, R., Ma, Y., McGilvary, J. and Common, M. Natural resourceand environmental economics. Longman, 2003. Tietenberg, T. Environmental and natural resource economics.Longman.
4. Readings, 2002.
5. Baumol, W. J. & Oates, W. E, The Theory of Environmental Policy.Cambridge University Press, 2000.
6. Pearce, D. & Turner, R.K. Economics of natural resources and theenvironment. Harvester Wheatsheaf, 1990.
7. Perman, R., Ma, Y., McGilvary, J. and Common, M. Natural resourceand environmental economics. Longman, 2003.
8. Tietenberg, TEnvironmental and natural resource economics.Longman. 2002.

HE 403: Development Economics

Course objective:

This is an introductory development economics course that aims to provide students an idea on the different aspects on which developing countries are socially and economically constrained and explore the potential to improve their quality of life.

Learning outcomes:

After completion of this course students will be able to:

- Demonstrate familiarity with some central themes and issues of economic development.
- Possess an understanding of the difference between growth and development, major growth theories, the measurement of inequality, significance of agriculture in developing countries, poverty and population issues facing the world, international trade, and importance of foreign aid.
- Be familiar with recent issues of development such as LDC graduation, means of implementation and SDGs

- Analyse empirical evidence on the patterns of economic development.
- Read critically the journal literature in the area of economic development.

Course contents:

Introducing Economic Development: Global Perspectives

The evolution of thought on poverty reduction, development andgrowth

Measuring development and development gap: Human Development Index and other indices of development and quality of life.

Classical theories of development: Rostow's growth model, Harrod-Domar growth model, structural change models, international dependencerevolution and neoclassical counter-revolution (Solow growth model) **Development Strategies:** Problems of over-specialization in primary industry for developing countries, socio-economic costs of development, pattern of industrialization in developing countries, terms of trade between agriculture and industry, Infrastructure and its importance.

Poverty and inequality of income and wealth: multidimensional poverty index (MPI), headcount index, total Poverty Gap, FGT index; size distribution, Lorenz curve, Gini Coefficient, Kuznet's inverted-U hypothesis.

Economic Exchange, Trade and Efficiency

Human Capital: Health- Health-Poverty Trap Application to Nutrition and Productivity, health returns and constraints on investments, problems of high fertility in developing countries- microeconomic household theory and Malthusian population trap

Urbanization and migration

External finance for development: FDI, ODA, Remittances, South-South Cooperation.

Economic performance of the Least Developed Countries (LDCs)

Transforming our world- Sustainable development goals (SDGs) Development pattern of Bangladesh

References:
1. Meir, G.M&J.E. Rauch. Leading issues in Economic Development, 8thedition, Oxford University Press, New York, 2005.
2. Todaro, M. P. & Smith, S. C. Economic Development, 12th edition,Pearson Education Limited, 2015.
3. Adelman, I. Theories of Economic Growth and development, StanfordUniversity Press, Stanford, 1961
4. Ghatak, S. An Introduction to Development Economics, Allen andUnwin, London, 1986.
5. Hayani, Y. Development Economics, Oxford University Press, NewYork, 1997.
6. Kindleberger, C.P. Economic Development, 3e, McGraw Hill, NewYork, 1977.
7. Thirwal, A.P. Growth and Development, 6th Edition, Macmillan,London, 1999.
8. Ray, D. (1998). *Development economics*. Delhi: Oxford UniversityPress.

HE 404: Econometrics III

- Provide detailed econometric procedures for limited dependent variables
- Understand the survival analysis and duration analysis
- Orient with basic panel data models

Learning outcomes:

Upon successful completion of the course students will be able to:
- Use appropriate duration models
- Recognize the importance and use of panel data model
- Identify the relevant model for limited dependent variables

Course contents:

Binary outcome model and Regression with Truncated and Censored

Dependent Variable: Maximum Likelihood Methods, Logit and Probit Models for Binary Response, The Tobit Model for Corner Solution Responses (Truncated and Censored Data), Sample Selection Corrections

Factor analysis & data reduction

Survival/duration analysis: Cox regressions, and other survival models

Time Series Model: The Nature of Time Series Data, Classical Linear Regression Assumptions of Time series, Stationary and Weakly Dependent Time Series, Uni-variate Model (AR, MA and ARIMA models) , Vector Auto Regressive (VAR) Models: Reduced VAR, Recursive VAR and Structural VARand Co-integrating Regression analysis.

Introduction to Pooled and Panel Data Estimators: Pooled OLS, difference in difference estimator, fixed effect model, random effect model, Hauseman Test

References:
1. Introductory Econometrics: A Modern Approach (Third Edition),Jeffrey Wooldridge, Thompson-Southwestern, 2006.
2. Econometric Analysis. 3d ed., William Greene, New York: McMillan,1997.
3. Griffiths. William E, R. Carler Hill and George Judge: Learning andPracticing Econometrics, John Wiley and Sons, New York, 1993.
4. Andrew M. Jones, Health Econometrics, University of York.

HE 405: *Economics of Uncertainty and Insurance*

- Introduce students to the basic principles of insurance including demand, supply of insurance and different terminologies
- Understand the role of information in insurance market
- Familiarize the role of reinsurance for insurance market, other relevant issues

Learning outcomes:

Upon successful completion of the course students will be able to:
- Explain insurance terminologies in insurance
- Identify factors relevant for demand and supply of insurance
- Measuring risks and premium I.e. design an insurance plan
- Recognize the challenges of health insurance

Course contents

Insurance and its Economic Role

Uncertainty: Turning Uncertainty into Risk, Utility Under Uncertainty

Risk: Measurement, Perception, and Management of Health Risks

Demand for Health Insurance: Decisions Under Risk with Diversification Possibilities Vis-A-Vis without diversification possibilities

The Health Insurance Company and its Insurance Technology

The Supply of Health Insurance

Health Insurance Market and Asymmetric Information: Basic Adverse Selection Models, Advanced Topics in Adverse Selection, Moral Hazard, Ex Post Moral Hazard and Fraud

Insurance Pricing: Actuarial Methods and Designing of Health Insurance, Social Health Insurance

Reinsurance Market Regulation of Health Insurance

Challenges Confronting Health Insurance

References:
1. Zweifel P., & Eisen R.. Insurance economics, Springer Science &Business Media, 2012.
2. Borch K. H. Sandmo A., & Aase K. K. Economics of Insurance (Vol. 29).Elsevier, 2014.
3. Seog S. H. The economics of risk and insurance. John Wiley & Sons,2010

Eighth Semester

HE 406: Economics of Healthcare III

Couse objectives are to:

- Enable to understand the unique characteristics of health sector to analyse the demand and supply of health care
- Enlighten with different types of organizations functioning in the health sector
- Instruct the relationship between population and economics that incorporates the health sector
- Determine the importance of nutrition by prioritizing investment innutrition affecting the outcome of health sector

Learning outcomes:

Upon completion of the course successfully, the learner will be able to:

- Distinguish the health sector from other sectors of economy andidentify the unique problems of this sector following the solutions
- Apply the knowledge of different organizations concerning health sector in various analysis
- Design different problems relating population, economics, nutritionand thereby health and outline the solutions
- Critically think about solutions of various problems of health sector and contribute to policy making and management of this sector.

Course contents:

Overview: Demand for and supply of health care, market failures and role ofpublic sector

Theory of Role of Non-Government Organization in Health: Why non- profit firms exist in health care? Emergence of the non-profit organizations, interest group theory, models of non-profit hospital behavior, relative efficiency of non-profit vs. for-profit organizations, property rights theory and profits/incentives

Economics of Health Insurance: Basic theory of health insurance,coinsurance, copayments, deductibles, moral hazard and adverse Selection

Macroeconomics and Health: Investing in health, health in other policies,Sustainable Development Goals

Population Economics: Economic causes and effects of population pressure

Microeconomic Analysis of Some Population Issues: Demand for children, son vs daughter preference, demand for family planning, rural- urban migration (Harris-Todaro Model), subsidy on health goods, rationing ofhealth goods

Effects of Population Growth on Macroeconomy: Impact on consumption, savings, capital-output ratio, unemployment rate and wagerate

Basic Theories of Population: Malthus, Boserup, Bilsborrow, Coale and Hoover, Geertz, theory of Cohen-Earth's carrying capacity urban migration (Harris-Todaro Model), subsidy on health goods, rationing of

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health goods

Effects of Population Growth on Macroeconomy: Impact on consumption, savings, capital-output ratio, unemployment rate and wagerate

Basic Theories of Population: Malthus, Boserup, Bilsborrow, Coale and Hoover, Geertz, theory of Cohen-Earth's carrying capacity

Effects of Population Growth in Bangladesh: Effects on land holding and rural employment, industrial employment and export of manpower, how to control population and investing in people

Nutrition Economics: Causes and Effects of Malnutrition: myths about malnutrition, reasons for weak commitment to nutrition program, vicious cycle of nutrition and malnutrition, importance of investment in nutrition, benefits and costs of nutrition programs

References:

1. Folland S., Goodman A.C., and Stano M., The Economics of health andhealth Care, Macmillan (3rd edition), 2000.
2. CulyerA.J., and Newhouse J.P. North-Holland Handbook of HealthEconomics, Elsevier, 2000.
3. Arrow K. Social Choice and Individual Values, 1975.
4. Jack W. Principles of Health Economics for Developing Countries,World Bank Institute, 1995.
5. Morris S., Appleby J., and Parkin D. Economic Analysis in HealthCare, Lee K. and Mills A. The Economics of Health in Developing Countries; Oxford University Press. 1983.
6. McGuire A., Henderson J. and Mooney G. The Economics of Health Care: an introductory text; London, Routledge and Kegan Paul, 1988.
7. Mills A. and Gilson L. Health Economics for Developing Countries: ASurvival Kit, 1988.
8. Zweifel P. and Breyer F., Health Economics, O.U.P., 1997.
9. Jacob P. The Economics of Health and Medical Care, Jones andBartlett Learning, 2004.
10. Coale A. J, and Hoover E. M. Population growth and economicdevelopment. Princeton University Press, 2015.
11. Razin A. and Sadka E. Population Economics, The MIT Press, TheInternational Economy 1996.2 (1996): 88-90, 1995.
12. Lee, R., New perspectives on population growth and economic development, Trabajopreparado para the UNFPA plenary session onAfter Cairo, Issues and Challenges, 2009.

HE 407: Structure and Management of Health Sector

Course objectives are to:

- Understand basic concepts of health and its changing definition overtime
- Understand the structure of health care system of Bangladesh andother comparable countries

Learning outcomes:

Upon successful completion of the course students will be able to:
- Critically analyse the structure of health sector
- Use hospital statistics and health information system
- Actively participate in planning healthcare system

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Course contents:

Changing concepts of health and diseases from ancient concepts to modern concepts.

Development of structure of Bangladesh Health Service from historical perspective.

Important issues related to health: Access, Coverage, Efficiency, Equity, Quality, Safety, Sustainability, Right based equity.

Better coverage initiatives- National strategy for adoption of SDG in health sector including achievements of past activities i.e. Revitalization of PHC, ESP, MDGs, etc.

Structure of ministry of health and family welfare; policy-level,execution/implementation level, regulation level

Structure from district to below level Population wise health care service facilities

Human recourses in Public Health Sector; job responsibilities and activities,trend of health care provides over the decade, challenges in hard to reach areas and staff management, problems in health care service provides

Budgeting in public health sectorHealth information systems Hospital statistics

Planning in public health sector; planning from independence to last, causes of implementation failure: contextual factor (sociocultural, economic, political, administrative), lack of clarity in health plans, gap in expertise

Weakness of implementation process; weakness in project management,mismanagement of financial resources, mismanagement of human resources, weak referral system, inadequate supervision – monitoring- coordination, malpractice of health care providers, poor management of medicine and equipment

Institutional features responsible for procedural weakness; dominance of donor, bureaucratic dominance, centralizes administration, weak decentralization, poor information and coordination network

Changes and improvement in public health sector over the decade Health systems

of different countries

Regulation in public health sector

References:
1. Hospital Management by Prof. AKM Salahuddin.
2. Management by Griffin.
3. Bangladesh Health Bulletin 2015.
4. Annual Performance Appraisal 2014-2015.
5. Health Systems in Transition: Bangladesh Health system review Vol. 5No. 3 2015.
6. Bangladesh Health Policy 2011.

7. Health Population & Nutrition Sector Strategic Plan (HPNSSP) 2011 –2016. Planning Wing Ministry of Health and Family Welfare Government of Bangladesh.
8. Basic Concepts of Health Care Human Resource Management byNancy J, Niles, Rollins College, Winter Park, Florida.
9. SDGs 2016-2030.
10. Syed A,min Tabish. Hospital and Health Services Administration-Principles a Practice.
11. Rashid KhabirHyder. Text Book of Community Medicine and Health.
12. Park and Park. Text Book of Community Medicine.
13. Bruce J. Fried, Myron D. FOttler and James A. Johnson. HumanResources in Healthcare Managing for Success.
14. R. D. Agarwal. Organization and Management.
15. Recent WHO Reports.

HE 408: Pharmacoeconomics

Course objectives are to:

- Provide a foundation on pharmacogenomics
- Understand the difference between pharmaceutical products with other products
- Gain the skill required for economic evaluation of pharmaceutical products

Learning outcomes:

Upon successful completion of the course students will be able to:
- Recognize the difference between pharmaceutical produces and other commodities
- Analyze the market structure of the pharmaceutical products and how it is related to difference policy
- Execute economic evaluation of pharmaceutical products

Course contents:

Introduction: Definition, scope and importance of pharmaceutical economics

Demand: Demand for pharmaceutical products vis-a-vis other commodities,determinants of demand of pharmaceutical products, health insurance Vs demand for pharmaceutical products, price discrimination of pharmaceuticalproducts, market entry of generic drugs and its impact on demand of patentdrugs, and therapeutic equivalence and the generic competition paradox

Promotion (Advertising) And Marketing of Pharmaceutical Products: Marketing of pharmaceutical products vis-à-vis other commodities,pharmaceutical promotion policies, impact of aggressive marketing ondemand, price and quality of pharmaceutical products

Pharmaceutical Industry: Structure of the industry, role of R&D, product development cycle and patient policies, vertical and horizontal integration of pharmaceutical firms, market structure of pharmaceutical products

Pricing of Pharmaceutical Products: Pharmaceutical prices and pricingmodels, e.g., regulation of mark-ups in pharmaceutical supply anddistribution chain, costs plus pricing formulae, external reference

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pricing Pharmaceutical Policies: The public choice model of policy making,pharmaceuticals, cross national price differences, drug policies and thepolitics of essential drugs in Bangladesh

Pharmaceutical Policies: The public choice model of policy making, pharmaceuticals, cross national price differences, drug policies and the politics of essential drugs in Bangladesh

Regulations: Government regulation and the drug administration, patent protection, new drug introduction, generic products approval of new drugs, pricing of new drugs, drug policy and the politics of essential drugs in Bangladesh

Economic Evaluation of Pharmaceutical Products: Cost-Effectiveness, Cost-Utility and Cost-Benefit Analysis, Markov Modelling, and measurementof outcomes

References
1. Vogel, Ronald. Pharmaceutical economics and public policy. CRCPress, 2007.
2. Chowdhury, Zafrullah. The politics of essential drugs: the makings of asuccessful health strategy: lessons from Bangladesh. University Press,1996.
3. Sloan F.A., and Hsieh C. R., Health Economics, MIT Press, 2015.
4. Drummond M.F. et. al. Methods of Economic Evaluation of HealthCare Programmes, Oxford Medical Publications, Oxford, 2015.
5. Gold M R and et. al. Cost-effectiveness in Health and Medicine, OxfordUniversity Press 1996.
6. Schweitzer S. Pharmaceutical Economics & Policy, Oxford UniversityPress, 1997.

HE 409: Macroeconomics II

Course objectives are to:

- Understand issues related to exchange rate, income determination,investment and unemployment and other macroeconomics issues
- Explain the details of Bangladesh economy
- Understand the macroeconomics and its relation to health

Learning outcomes:

Upon successful completion of the course students will be able to:
- Connect the defition of different macroeconomics to data or real life
- Recognize the importance of health in macroeconomics
- Critically evaluate the different macroeconomic policies

Course contents:

Exchange rates and the balance of payments: The demand for and supply of foreign exchange, exchange rate regimes, the balance of payments (BOP) account. BOP equilibrium.

Extended Model of Income Determination (Flexible Price and Open Economy): Aggregate demand curve in an open economy, the IS-LM-BP model; fiscal and monetary policies under fixed and flexible exchange rate regimes assuming perfect mobility of capital, consumption; short run and long run

consumption function, life cycle hypothesis, permanent income hypothesis, and relative income hypothesis

Investment: Theory of investment-NPV and MEI criteria; the stock market and Tobin's q model.

Government budget deficit: Sources of the deficit; the deficit and the business cycle, debt-financing vs. money financing, possible impact of the deficit on future generations.

Inflation: Inflation and interest rates- the Fisher effect; short-run trade-off between inflation and unemployment-adaptive expectations & rational expectations and their policy implications, the short-run and long-run Phillips curves. Hysteresis stabilizing the economy.

Unemployment: Efficiency wage theory, insider-outsider theory, implicit contract theory, imperfect information theory.

Macroeconomics and Health

Macroeconomic indicators and performance of Bangladesh

References:
1. Blanchard, O. Macroeconomics, 7th edition, Pearson, 2017
2. N. Gregory Mankiw. Macroeconomics, Worth Publishers, 7th edition, 2010.
3. Branson, W.H. Macroeconomic Theory and Policy, 2nd Edition; 1989.
4. Shapiro, E. Macroeconomic Analysis, Galgotia; 1990.
5. Dornbusch, R. & Fischer, S., Macroeconomics, McGraw Hill.
6. Froyen, R. T., Macroeconomics: Theories & Policies, Macmillan.

HE 410: Epidemiology

Course objectives are to:

- Introduce the students to the basic concepts of epidemiology
- Orient the students with epidemiological measures and studies

Learning outcomes:

Upon successful completion of the course students will be able to:
- Distinguish different measures of epidemiology and epidemiological study designs
- Calculate the estimates of epidemiological measures
- Set a criterion for causal inference

Course contents:

Introduction: History and basic concepts of epidemiology, objectives and differences between epidemiology and clinical medicine.

Epidemiological Studies: Classification of epidemiological studies, case control studies, and cohort studies.

Epidemiological Measures: Frequency measures, measures of association, impact measures.

Screening: Basic concepts and types of screening, instrument of screening and its quality, tools of validity, agreement statistics, confounding factors.

Bias in Epidemiology: Bias in epidemiological studies.

Causality: Criteria for causal inference

References:
1. David E Lilienfeld, Paul D. Stolley). Foundation of Epidemiology. Oxford University Press, 1994.
2. Leon Gordis. Epidemiology. WB Saunders Company, 1996.
3. MOHFW. Health and Population Sector Programme, 1998-2003, 1998.
4. MOHFW. Conceptual Framework for Health Nutrition and Population Sector Programme 2003-2006, 2003.
5. Park and Park. A textbook of Public health (6th Edition), 2000.
6. Rashid, Khabir, Haider). A text Book of Public Health (3rd Edition), 2000.
7. Selim Reza. Public Health, 2000.

HE 411: Viva Voce

Internship and Project Work

Students must undertake an Internship/Project Work to obtain B.S.S. (Honours) in Health Economics. All the activities of the Internship/ Project Work should be completed within 03 (three) months after the completion of the 8th semester final examination. The grade obtained in the Internship/ Project Work will be displayed in the marksheet/transcript of the students but the grade will not be taken into account in determining their CGPA. However, students must obtain a minimum grade of "B" in the Internship/Project Work to complete the B.S.S. (Honours) degree.

2.3: M.S.S. in Health Economics

First Semester

HE 601: Advanced Microeconomics I

Course objectives are to:

- Orient students with advanced topics in microeconomic theory
- Develop the skill to apply microeconomic theory in different sector including health
- Understand the advanced topics in welfare economics
- Make familiar with high impact micro theory articles
- Cross the gap between undergraduate micro with advanced microtheory

Learning outcomes:

- Understand the advanced topics in micro theory
- To be able to apply advanced topics of micro theory to different context
- Develop a micro theory relevant to health sector
- Understand the steps of writing micro theory paper

Course contents

- The economic approach to behavior: Preferences, utility functions,revealed preference
- Demand analysis: Classical demand theory, demand aggregation
- Production and Producer theory: Supply of products, Factors of production, monopoly pricing, competitive producer theory and comparative statics
- Partial Equilibrium Competitive Markets: Competitive equilibrium
- The Walrasian model of general equilibrium
- Social Choice and Welfare

References:

1. Gibbons, Robert. Game Theory for Applied Economists. PrincetonUniversity Press; Reprint edition, 1992.
2. Jehle, Geoffrey, and Philip Reny. Advanced Microeconomic Theory.2nd ed. Reading, MA: Addison-Wesley, 2000.
3. Kreps, David. A Course in Microeconomic Theory. Princeton, NJ:Princeton University Press, 1990.
4. Mas-Colell, Andreu, Michael Whinston, and Jerry Green. Microeconomic Theory. New York, NY: Oxford University Press, 1995.
5. Myerson, Roger. Game Theory. Harvard University of Press, 1997.
6. Varian, Hal. Microeconomic Analysis. 3rd ed. New York, NY: W.W.Norton, 1992.
7. Silberberg, Eugene, Wing Suen. The Structure of Economics: AMathematical Analysis. 3rd ed. Irwin/McGraw-Hill; 2000.

HE 602: Advanced Macroeconomics

- Introduce students with the advanced topics of macroeconomics especially growth theory, business cycle, investment, consumptionetc.

Learning outcomes:

- Cross the gap between undergraduate textbooks in macroeconomics and the modern literature that features dynamic models built upon microeconomic foundations and rational expectations
- Learn how to use key methodological tools in modern dynamic macroeconomics.
- Apply those tools to analyse practical questions in macroeconomics.

Course contents

The Solow growth model

Infinite-horizon and overlapping-generations models (The Ramsey-Cass-Koopmans model, The diamond model)

Endogenous growth

Cross-country income differencesReal-business-cycle theory

Dynamic stochastic general-equilibrium models of fluctuationsConsumption

Investment Unemployment

Inflation and monetary policy

Budget deficits and fiscal policy

References:
1. Romer, David. Advanced Macroeconomics. McGraw-Hill, 2011.
2. Barro, Robert. Macroeconomics MIT Press and its supplement (DLS),1997.
3. Heijdra Ben J. and Frederick van der Ploeg. The Foundations ofModern Macroeconomics. Oxford University Press, 2002.
4. Ljungqvist, Lars, and Thomas Sargent. Recursive MacroeconomicTheory, 2002.
5. McCandless, George T. Jr. with Neil Wallace. Introduction to DynamicMacroeconomic Theory: an overlapping generation approach. Harvard University Press, 1991.
6. Sachs, Jeffrey D. and Felipe Larrain B. Macroeconomics in the Global Economy. Harvester Wheatsheaf. 1994.
7. Champ and Freeman. Modeling Monetary Economies, 2003.

HE 603: Advanced Health Economics

- Introduce the advanced topics in health economics
- Discuss issues related to resource mobilization for the health sector
- Discuss current health care financing strategies and issues related to purchaser provider split
- Look in to the tradeoff between efficiency and equity in the health sector
- Be familiar with some influential papers in health economics
- Comprehend the NHA from inception to report

Learning outcomes:

- Comprehend the advanced topics in health economics
- Relate the theories of health economics to health policies
- Identify the linkages between health care financing, health care management and economic evaluation of health care
- Learn in the process of NHA and its usage to the policy making
- Recognize the importance of health system responsiveness

Course contents:

Health care financing framework: Third party payers, reimbursement, integration between third- party payers and health care providers, Options for health care financing

Health care financing strategy: The goals and objectives universal health coverage, the strategies, the current status in Bangladesh

The market for physicians' services: Medical school capacity and concepts of physician shortage and surplus, physician supply in the long run, physicians' short run decisions, price discrimination
Hospitals: Context, alternative models of hospital behavior, hospital ownership and performance, regulations of hospitals, an alternative to regulating hospitals

Resource Allocation and Equity in Health Care Service Delivery: Concept, equity in health, equity in access, equity in health service utilizations, measurement of Horizontal and Vertical Equity, resource allocation formula

Quality of care and medical malpractice: Markets and market failure, characteristics of health care quality, adverse events and negligent injuries, supply side quality of care safeguards and government oversight and regulation, mandatory error reporting, Tort law as a mechanism for improving patient safety and health care quality, medical malpractice

Health System Responsiveness: Prompt attention, dignity, clear communication, autonomy, confidentiality, choice of provider, quality of basic amenities, access to social support networks.

Overview of National Health Accounts (NHA): What are the NHAs? History of NHA estimation, NHA frameworks, System of Health Accounts (SHA), the differences between SHA 1.0 and SHA 2011, Bangladesh National Health Accounts

Classification for NHA: Classification of function, provider, financing schemes, financing agents.

Market of Drugs and Pharmaceutical Manufacturers

Evaluation of Major Health Systems: UK System, German System and US System

References:
1. Folland S., Goodman A.C., and Stano M., The Economics of health andhealth Care, Macmillan (3rd edition), 2000,
2. CulyerA.J., and Newhouse J.P. North-Holland Handbook of HealthEconomics, Elsevier, 2000.
3. Arrow K. Social Choice and Individual Values, 1975.
4. Jack W. Principles of Health Economics for Developing Countries,World Bank Institute.1999.,
5. Morris S., Appleby J., and Parkin D. Economic Analysis in HealthCare, Lee K. and Mills A. The Economics of Health in Developing Countries; Oxford University Press,1983.
6. McGuire A., Henderson J. and Mooney G. The Economics of Health Care: an introductory text; London, Routledge and Kegan Paul, 1988.
7. Mills A. and Gilson L. Health Economics for Developing Countries: ASurvival Kit,1988.
8. Zweifel P. and Breyer F. Health Economics, O.U.P.1997.
9. Jacob P. The Economics of Health and Medical Care, Jones andBartlett Learning.2004.

HE 604: Public Health and Epidemiology

Part I: Public Health
Course objectives are to:

- Define public health and learning the difference between individual-and population-based strategies for improving health
- Understand the goals of public health, and the challenges and opportunities for closing the gap between science and practice
- Describe the leading global health problems, including their causes and methods for prevention
- Know the core functions of public health and how public health is organized at the local, state, national, and international level

Learning outcomes:

Upon completion of the course, students should be able to:

- Explain the history and philosophy of public health as well as its core values, concepts, and functions across the globe and in society.
- Identify the methods, and tools of public health data collection, use,and analysis and why evidence-based approaches are an essential part of public health practice.
- Recognize the basic processes, approaches, and interventions that identify and address the major health-related needs and concerns of populations.
- Identify the socio-economic, behavioral, biological, environmental, and other factors that impact human health and contribute to health disparities.
- Utilize the basic concepts of public health-specific communication,including technical and

professional writing and the use of mass media and electronic technology

Course contents:

Introduction to Public Health Principles and Practice

- Public health: The population health approach
- Evidence-based public health
- Public health data and communications
- Social and behavioral sciencesPublic Health in a Global Context
- What is global health: Key concepts, successes and challenges
- Gender, wellbeing and global health
- The Post-2015 Agenda: Improving health systemsInfectious Disease
- Infectious diseases: Global burden, costs, and trends
- Vaccine controversies Chronic Diseases
- Chronic disease: Global burden, costs, and trends
- The Global Tobacco EpidemicInjuries

- Healthcare organization and financing

- Measuring the performance of health systems
- Public health institutions and systems
- The future of population health

Part II: Epidemiology

Course objectives are to:

- Describe the principles, interpretation, strength and limitations of epidemiological study designs that are commonly used for research
- Familiarize the students with many of the common analytic methods used by epidemiologists to obtain valid measures of the effect of a risk factor on an outcome
- Identify the confounding factor(s) and interactions in epidemiological studies and adjust them during analysis

Learning outcomes:

Students who successfully complete this course will be able to:
- Demonstrate advanced knowledge and awareness of the role of epidemiology and its contribution to other health-related disciplines
- Choose appropriate designs including randomized controlled trial, cohort, case-control, and cross-sectional studies and develop detailed protocols for epidemiological studies
- Calculate and interpret basic population measures of health and disease occurrence including incidence, prevalence, and survival
- Make appropriate comparisons of disease rates within and between populations
- Assess the results of epidemiological studies (their own or other investigators'), including critical appraisal of the study question, study design, methods and conduct, statistical analyses and interpretation

Course contents:

Measures of disease frequency and exposure effects Confounding

and interaction

Classical methods of analysis for cohort studies Classical methods of

analysis for case-control studiesUnconditional logistic regression

Poisson regression for cohort studies

Survival analysis and proportional hazards regressionPractical issues

in study design and analysis

Conditional logistic regression for case-control studiesClustering of

data in epidemiological studies Strategies of analysis

References:

1. David E Lilienfeld, Paul D. Stolley). Foundation of Epidemiology.Oxford University Press, 1994.
2. Leon Gordis. Epidemiology. WB Saunders Company, 1996.
3. MOHFW. Health and Population Sector Programme, 1998-2003, 1998.
4. MOHFW. Conceptual Framework for Health Nutrition and PopulationSector Programme 2003-2006, 2003.
5. Park and Park. A textbook of Public health (6th Edition), 2000. Rashid, Khabir, Haider). A text Book of Public Health (3rd Edition),2000.
6. Selim Reza. Public Health, 2000.
7. Clayton, David, Michael Hills, and A. Pickles. Statistical models inepidemiology. Vol. 161. Oxford: Oxford university press, 1993.
8. Machin, David, Yin Bun Cheung, and Mahesh Parmar. Survivalanalysis: a practical approach. John Wiley & Sons, 2006.
9. Kirkwood, Betty R., and Jonathan AC Sterne. Essential medicalstatistics. John Wiley & Sons, 2010.
10. Breslow, Norman E., Nicholas E. Day, and Walter Davis. Statisticalmethods in cancer research. Vol. 2. Lyon: International Agency for Research on Cancer, 1987.
    -Volume 1: Analysis of case-control studies
    -Volume 2: The design and analysis of cohort studies

HE 605: Applied Econometrics (optional)

Course objectives are to:

- Orient student with advanced tools of econometrics
- Learn to be able to perform each step of data analysis
- Acquire the techniques of the writing of empirical work

Learning outcomes

At end of the course, students will be able to

- Understand the theoretical reason(s) of using different econometric model in different context

- Effectively use empirical software for data analysis starting from data management to results reporting
- Decide on appropriate modeling (empirical) for various data types
- Provide economic interpretation of the results
- Write publishable empirical paper

Couse contents:

Core Methods: Brief Overview

- OLS
- Maximum Likelihood Methods
- GLS
- Generalized Method of Moments and Minimum Distance Estimation

Advanced Topic in Panel Data Estimators

- Panel Generalized Methods of Moments Estimator
- Fixed Effect Estimator, First Difference Random Effect Estimator, Between Effect Estimator, Random Effect VS GLS Estimator
- Contemporaneous exogeneity, Weak exogeneity and StrictExogeneity,
- Dynamic Panel Data Model

Nonparametric and Semiparametric Methods

Models with Limited Dependent Variables and Other Nonnegative

- Unordered Multinomial Models
- Ordered Multinomial Model, Nested Logit Model
- Count Data Models (Poisson Regression)
- Fractional Responses, Corner Solutions Outcomes, Censored and Truncated model (Tobit), Two Part model, Sample Selection Modeland Heckman Two Step Estimator (Heckit)

Time Series: Seasonal Models

References:

1. Wooldridge, Jeffrey (2010), Econometric Analysis of Cross Section andPanel Data (Second d edition), Cambridge: MIT Press.
2. Hayashi, Fumio (2000). Econometrics. Princeton University Press.
3. W. Greene, Econometric Analysis, 7th ed., Prentice Hall
4. R. Davidson and J.G. MacKinnon, Econometric Theory and Methods,Oxford University Press, 2003
5. Greene, W.H., Econometric Analysis, (7th edition), Pearson, 2012
6. Cameron, Colin & Pravin Trivedi. Microeconometrics: methods andapplications Cambridge university press, New York, 2005

HE 606: Health Policy and Planning

Course objectives are to:

- Introduce the process of policy and planning in general and health section to be specific
- Provided detailed explanation of various policy and planning of Bangladesh health sector

Learning outcomes:

- Apply the policy-making process to improve population health.
- Apply the principles of evidence-based public health in practice and policy formulation.
- Apply appropriate strategic planning methodologies and other decision support tools to organizational management.
- Critically analyze the policy and planning documents of Bangladesh

Course contents:

Introduction to Health Policy and Planning: Health policy and its importance in the health care setting, a systems approach to policy analysis, Macro and micro policy, stages in the development of a policy, definition, situation analysis for making policy, basics of policy formulation, health policy of Bangladesh past and present, principles of effective planning, information requirement at different stage of planning, basics of planning formulation (steps, cycle, broad senses etc.), economic appraisal/ sustainability analysis, planning tools

Contextual Issues related Health Policy and Planning: Health and concepts of health, factors determining the health of the nation, goals and keyfunctions of health systems-WHO model, problems of health systems, Alma- Ata Declaration and Primary Health Care (PHC), Demographic transition and health transition, trends in world health, demographic and health trendsin Bangladesh compared to selected SEA countries.

International Development Targets for Health: ICPD objectives, Millennium Development Goals, status of Bangladesh regarding the achievement of targets.

Health and population policies/ programmes in Bangladesh: Anoverview of key policies/ programmes: HPSS, HPSP, PRSP, HNPSP. **Pharmaceutical Policy:** Problems of pharmaceutical supply in developingcountries, nature of international pharmaceutical industry, the role of publicsector in pharmaceutical supply, importance of national drugs policy, goalsand components of national drugs policy, constraints, opportunities andstrategies for developing a rational drug policy.

Policy in response to international initiative; MDG, SDG.

Reference:
1. Green A. An Introduction to Health Planning in Developing Countries,Oxford, OUP. 1988.
2. Abel S. B. An Introduction to Health Policy, Planning and Financing.London, Longmans,1994.
3. Ministry of Planning, Govt. of Bangladesh. Poverty Reduction StrategyPapers (PRSP), 2003.
4. Ministry of Health and Family Welfare. Govt. of Bangladesh, Human Resource Management in Health, 2002.

Second Semester

HE 607: Advanced Microeconomics II

- Introduce the advanced topic micro theory especially information issue and game theory
- Provide detailed explanation about game theory and its application tohealth sector

Learning outcomes:

- Apply the knowledge of micro theory especially game theory and information problem in economics
- Recognize the importance of information, agency other issues to health and other applied economics branch
- Be ready for pursuing PhD course in the best schools of North America and other regions

Course contents:

Expected Utility theory: Utility theory under uncertainty, domination,duality

Game Theory: Strategic-from games, domination, Nash equilibrium, incomplete information games, extensive form games, sequential equilibrium,repeated games

Information Economics: Risk aversion, and risk sharing with common information

Principal-agent problem with moral hazard and adverse selection, equilibrium in markets and bargaining games with asymmetric information

Auctions and Mechanism Design

References:
1. Gibbons, Robert. Game Theory for Applied Economists. PrincetonUniversity Press; Reprint edition, 1992.
2. Jehle, Geoffrey, and Philip Reny. Advanced Microeconomic Theory.2nd ed. Reading, MA: Addison-Wesley, 2000.
3. Kreps, David. A Course in Microeconomic Theory. Princeton, NJ:Princeton University Press, 1990.
4. Mas-Colell, Andreu, Michael Whinston, and Jerry Green. Microeconomic Theory. New York, NY: Oxford University Press, 1995
5. Myerson, Roger. Game Theory. Harvard University of Press, 1997
6. Varian, Hal. Microeconomic Analysis. 3rd ed. New York, NY: W.W.Norton, 1992.
7. Silberberg, Eugene, Wing Suen. The Structure of Economics: AMathematical Analysis. 3rd ed. Irwin/McGraw-Hill; 2000.

HE 608: Economic Evaluation of Health Care

Course objectives are to:

- Orient advanced topics of economic evaluation
- Discuss advanced issues of the measurement of health outcomes
- Look into the changes in the measurement of burden of disease and the justifications
- Introduce economic evaluation issues relevant to health and environment, and Bayesian analysis

Learning outcomes:

After completing this course, the students will be able to:

- Familiarize with advanced issue of economic evaluation
- Design a full economic evaluation of different interventions
- Design clinical studies and RCTs
- Conduct economic evaluation in dynamic setting
- Do Bayesian analysis and understand its relevance to economic evaluation

Course contents

Measuring and valuing effects

Advanced techniques of measuring burden of disease

Using clinical studies and RCT as a vehicle for economic evaluationEconomic

evaluation using decision analytic modelling Characterizing, reporting, and

interpreting uncertainty

Health Impact Assessment: Methods of Health Impact Assessment, evidences on Health Impact Assessment.

Cost-Benefit Analysis: Definition of Cost-Benefit Analysis, CBA decision rules, measures of welfare, economic impact analysis, cost-benefit analysisof social programs, risk & uncertainty, indirect methods, contingent

valuation, valuation of a statistical life (VSL) and statistical life-years(VSLY)

Environmental regulation, Global warming

Bayesian Economic Evolution: Introduction to Bayesian inference, statistical cost-effectiveness analysis, Bayesian economic analysis in practice

Reference:
1. Drummond M F, Stoddart G L, Torrance. Methods for the Economic Evaluation of Health Care Programmes. Oxford University Press,1996.
2. F. A. Sloan (ed.) Valuing Health Care, Cambridge UniversityPress,1995.
3. M. R. Gold, J. E. Seigel, L. B. Russell, and M. C. Weinstein (eds.) Cost-effectiveness in Health and Medicine, Oxford University Press, 1996.
4. Spiegelhalter, David J., Keith R. Abrams, and Jonathan P. Myles. Bayesian approaches to clinical

trials and health-care evaluation. Vol.
13. John Wiley & Sons, 2004.
5. Baio, Gianluca. Bayesian Methods in Health Economics, CRC press,2013.

HE 609: Health Sector Reform

Course objectives are to:

- Orient students various reform and its relevant strategies
- Provide every detailing of reform starting from diagnosis to reform;financing to behaviour

Learning outcomes:

- Assess health system performance and its reform
- Understand the issues in health sector reform in developing countries
- Identify reform needs to implementing reform

Course contents:

Part A: Health System Analysis

- Introduction
- The health-reform cycles

- Judging health-sector performance: Ethical theory
- Political analysis and strategies
- Goals for evaluating health systems
- Assessing health-system performance
- From diagnosis to health-sector reform

Part B: Control Knobs

- Financing
- Payment
- Organization
- Regulation
- Behaviour
- Key issues in health sector reform in developing countries Health sector reform in different countries

References:
1. Roberts, Marc, et al. Getting health reform right: a guide to improving performance and equity. Oxford university press, 2003.
2. Cassels, A., 1995. Health sector reform: key issues in less developedcountries. Journal of International development, 7(3), pp.329-347.
3. Berman, P., 1995. Health sector reform: making health developmentsustainable. Health policy, 32(1), pp.13-28.

HE 610: Advanced Topics in Development Economics

- Introduce advanced issues of development and development economics
- Understand the impact evaluation of different development program
- Provide developing experiences of the developed developing and least developed countries

Learning outcomes:

- Understand how the developing and least developed countries can bedeveloped
- Recognize the barriers of development
- Enrich with development models used in the development of developing countries
- Contribute to the development of the Bangladesh economy

Course contents

- What is Development?
- Life Satisfaction and Happiness
- Economic Growth and Convergence
- Growth, Endowments and Geography
- Methods: RCTs and Instruments
- Barriers to Development: Corruption, Civil war etc.
- Human Capital and Education
- Human Capital and Health
- Environment and Development

References:
1. Meir, G.M&J.E. Rauch. Leading issues in Economic Development, 8thedition, Oxford University Press, New York, 2005.
2. Adelman, I. Theories of Economic Growth and development, StanfordUniversity Press, Stanford, 1961.
3. Amartya Sen, "The Concept of Development" UNDP, 1990 HumanDevelopment Report
4. Acemoglu. Johnson and Robinson. "Understanding Prosperity andPoverty: Geography, Institutions, and the Reversal of Fortune"
5. Nathan Nunn, "The Importance of History for Economic Development"
6. Banerjee and Duflo, "The Experimental Approach to DevelopmentEconomics"
7. Svensson "Eight Questions about Corruption" Fisman and Edward Miguel, "Cultures of Corruption: Evidence from Diplomatic ParkingTickets," 2005.
8. Bardhan, Pranab. ―Corruption and Development: A Review of Issues.‖Journal of Economic Literature, vol. 35, no. 3, 1997.
9. Glewwe and Kremer, "Schools, Teachers and Education Outcomes inDeveloping Countries" Fullerton and Stavins. How Economists See The Environment. Science,1998.
10. DilipMookherjee, Pranab Bardhan, Kaushik Basu, Abhijit Banerjee,Ravi Kanbur New Directions in Development Economics: Theory or Empirics?

HE 611: Research Methodology, Dissertation and Viva-Voce

Course objectives are to:

- Orient different research methodologies along with epistemology

- Provide training on conducting empirical research
- Develop a skill for conducting a research

Learning outcomes:

- Identify the appropriate research method for the question to be addressed
- Conduct an independent research starting from framing a question to methodology to fieldwork to report writing

Course description:

Approximately fifteen classes will be held on methods of conducting research. Class tests (10 marks) and midterm examination (20 marks) will be held on the subject matters of class lectures.

Each student will prepare research proposal which will be finalized after presentation in the class (15 marks), before midterm examination.

There will be no final examination for this course. The dissertation prepared by the students will be treated as the substitute for the final examination (50marks). Students will conduct fieldwork and prepare the dissertation in four weeks after the semester final examination. Thereafter, a viva-voce examination will be held on the dissertation.

Course contents:

Introduction to Research Methodology: Methods of Acquiring Knowledge, Definition of Research, Difference between Research and otherMethods of Acquiring Knowledge, Definition of Scientific Research

Important Theories of Knowledge (Epistemology): Rationalism (Descartes and Spinoza), Empiricism (Locke, Hume, Berkley), CompositeView (Aristotle, Kant), Major Lessons of Epistemology for Research

Method of Conducting Research (Logic): Non-scientific Methods, Scientific Methods – Deduction (Aristotle), Induction (Becon, Hobbes),Composite Method for social science research

Evolution of Scientific Research Crucial Steps in

Research

Detailed Steps in Research (including steps in survey)

Method of Preparing research proposal

Method of preparing Thesis/ Dissertation

References:

1. Sharma B.A.V. and et. al., *Research Methods in SocialScience.*

2. Kish L., (1965), *Survey Sampling*, John Willey & Sons,Sydney

3. Wilkinson S., (1982), *Methodology and techniques of Socialresearch*

4. Monette D. R. and et. al., (1986), *Applied Social Research – Tool for the Human Services,* (Fourth edition), Harcourt BraceCollege Publishers.

5. Levy P. S., Lemeshow S., (1999), *Sampling of Population- Methods & Applications*, (Third edition), John Willey & Sons,Inc.

6. Foreit J. R. and et. al., (2006), *Scientific Writing for Reproductive Health Program,* USAID, Population Council,WHO.

7. Department of Economic & Social Affairs- Statistics Division(2005), *Designing Household Survey Sample: Practical Guidelines,* UN, New York.

HE 611: Project Development and Viva-Voce

Couse objectives are to:

- Gain knowledge on global standard of project management
- Learn tools and techniques of developing and managing health sector projects in Bangladesh
- Develop a project

Learning outcomes:

Upon successful completion of the course students will be able to:
- Manage a project following global standard
- Use the different tools and techniques of project management
- Ready or eligible for appearing the CAPM examination
- Develop his/her own projects

Course description:

Approximately fifteen classes will be held on the issues relating to project design and management. Class tests (10 marks) and midterm examination(20 marks) will be held on the subject matters of class lectures.

Each student will prepare a project proposal on health economics issues/programs which will be finalized after presentation in theclass (15 marks), before midterm examination.

There will be no final examination for this course. The project papers prepared by the students will be treated as the substitute for the final examination (50 marks). Students may need conduct field work and preparethe project paper in four weeks after the semester final examination.
Thereafter, a viva-voce examination will be held on the project paper.

Course contents:

Introduction to project management

Project management environment

Project managers roles

Project integration management

Project scope management

Project time management

Project cost management

Project quality, communication, resource, risk procedure, stakeholders'management

Projects in the health sector of Government of Bangladesh

References:

1. A guide to the project management body of knowledge (PMBOK guide),Project Management Institute (PMI), USA, Sixth edition, Newtown Square, 2017
2. Project Management Achieving Competitive Advantage, Jeffrey KPinto, Pearson, Second Edition 2011
3. Project management, R Panneerselvam and P. Senthikhumar, PHILeering Private Ltd., New Delhi, India 2009
4. J.P. Lewis, Fundamentals of Project Management, Second edition,American management association

Section 3

Academic Rules

3.1 Admission and Degree Requirements

B.S.S. (Honours) in Health Economics

Sixty students are admitted in the first year of the B.S.S. (Honours) programme based on the performances inthe admission test conducted by the Faculty of Social Sciences (D Unit) and Faculty of Arts (B Unit) in equal proportion.

The B.S.S. (Honours) programme is of four-year duration divided into eight semesters; two semesters in each academic year.

The requirements of B.S.S. (Honours) degree:

- Completion of 35 courses including viva-voce (total 140 credit hours).
- Passing of all courses individually and maintaining a minimum Cumulative Grade Point Average (CGPA) of 2.25.

M.S.S. in Health Economics

Students those who completed their B.S.S. (Honors) in Health Economics from the institute can get admitted to the M.S.S. program. The M.S.S. program is of one-year duration divided into two semesters.

The requirements of M.S.S. degree:
- Completion of 10 courses (40 credit hours),
- Passing of all courses individually and maintaining a minimum Cumulative Grade Point Average (CGPA)of 2.25.

3.2 Method of Instruction

The medium of instruction is English.

Teaching is done through lectures, supplemented by project work, case presentation, group discussions, seminars, audio-visual aids and visits to facility/ institutions/ organization related to their study. An emphasis is given to the project work, case method of instruction and other techniques that simulate situations.

For each course taken in a semester, a student is assigned textbooks and lecture material for the semester. Supplementary texts/journals/reading materials are also used. Students are required to prepare assignments asper guideline and schedule provided by the respective course teacher. Additionally, students are required to participate in class discussion and sit for periodical quizzes and tests.

Lectures and research seminars by prominent executives and researchers on the relevant sectors

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are arranged and students are required to participate.

3.3 Course Load

3.3.1 B.S.S. (Honours) in Health Economics
A student will enroll for four courses per semester during first to third academic year and will enroll for five courses in each semester of the fourth year. All courses are compulsory.

3.3.2 M.S.S. in Health Economics
A student will enroll for five courses per semester. In each semester, four courses are compulsory, and one course is optional.

3.4 Credit Structure

Credit Structure of B.S.S. (Honours) Degree Programme

The BSS (Honours) Programme in Health Economics shall be of four years duration divided into 8 (eight) semesters. Each semester shall be of 19 weeks, of which 15 weeks will be for class teaching, 1 week for preparation, and 3 weeks for holding the semester final examination of the semester.

- Since the credit hours are counted on the basis of lecture classes/ contact hours per week, number of lecture classes/contact hours shall be determined according to the credits assigned to each courses unit. For a 4-hour credit course unit, there shall be two lecture classes of 90 minutes each, and one 60 minutes discussion class/lab work/group presentation/ class tests every week.

Semester	No. of Courses	Total Marks	Earned Credits
1st	4	400	16
2nd	4	400	16
3rd	4	400	16
4th	4	400	16
5th	4	400	16
6th	4	400	16
7th	5	500	20
8th	5 Viva-voce	500 100	20 4
Total	35 Courses	3500	140

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Credit Structure of M.S.S. Degree Program

- The M.S.S. Programme in Health Economics shall be of one year duration divided into 2 (two) semesters. Each semester shall be of 19 weeks, of which 15 weeks shall be for class teaching, 1 week for preparation, and 3 weeks for holding the semester final examination.

- The programme shall include teaching of 10 courses a total of 1000 marks, which will be translated into 40 credit hours. The total credit hours shall be evaluated on the basis of 1000 total marks.

- Since the credit hours are counted on the basis of lecture class/ contact hours per weeks, number of lecture classes/contact hours shall be determined according to the credits assigned to each courses unit. For a 4-hour credit course unit, there shall be two lecture classes of 90 minutes each, and one 60 minutes discussion class/lab work/group presentation/ class tests every week.

Semester	No. of Courses	Total Marks	Earned Credits
1st	5	500	20
2nd	5	500	20
Total	10 Courses	1000	40

3.5 Evaluation and Grading

Evaluation and grading shall be determined on the basis of semester examination including:

- Semester final examination
- Term paper/ home assignments
- Class attendance
- Active participation in the discussion class/ tutorial class/ group participation/ class test

The Distribution of Marks for Evaluation for B.S.S

Class attendance	5%
Active participation in the discussion class/tutorial class/group participation/class test	10%
Term paper/home assignments	15%
Mid semester examination (Duration of 75 minutes)	20%
Semester Final Examination (Duration of 180 minutes)	50%
Total	100%

The Distribution of Marks for Evaluation for M.S.S

Class attendance	5%
Active participation in the discussion class/tutorial class/group participation/class test	10%
Term paper/home assignments	15%
Mid semester examination (Duration of 90 minutes)	20%
Semester Final Examination (Duration of 240 minutes)	50%
Total	100%

The distribution of Marks for class attendance

Attendance range (in percent)	Marks
90% and above	5.0
85% to less than 90%	4.5
80% to less than 85%	4.0
75% to less than 80%	3.5
70% to less than 75%	3.0
65% to less than 70%	2.5
60% to less than 65%	2.0
55% to less than 60%	1.5
50% to less than 55%	1.0
45% to less than 50%	0.5
Less than 45%	0.0

Grading System in 4-point Grading Scale

Marks range (in percent)	Letter Grade	Explanation (of performance)	Grade Points
80% and above	A+	Excellent	4.00
75% to less than 80%	A		3.75
70% to less than 75%	A-		3.50
65% to less than 70%	B+	Very good	3.25
60% to less than 65%	B		3.00
55% to less than 60%	B-		2.75
50% to less than 55%	C+	Good	2.50
45% to less than 50%	C		2.25
40% to less than 45%	D	Passing	2.00
Less than 40%	F	Failing	0.00

- ‖A+‖, ‖A‖ and ‖A-‖ grades are indicative of ‖excellent‖ performance overall by a student, earning gradepoints of 4.0, 3.75, and 3.50, respectively
- ‖B+‖, ‖B‖ and ‖B-‖ grades are indicative of ‖very good‖ performance overall by a student, earning gradepoints of 3.25, 3.00, and 2.75, respectively
- ‖C+‖, ‖C‖ is indicative of ‖good‖ performance overall by a student, earning grade points of 2.50, 2.25, respectively
- ‖D‖ grade is indicative of minimally acceptable ‖passing‖ performance overall by a student, earning agrade point of 2.00
- ‖F‖ grade is indicative of an unacceptable ‖failing‖ performance overall by a student, i.e., fail to earn anycredit point

3.6 Passing Criterion, Readmission, Attendance Policy, and Other Rules

3.6.1. Passing criterion for B.S.S. (Honours)

For promotion from one year to another year, a student shall require earning a minimum CGPA as follows
1st year- 2nd year: CGPA- 2.00
2nd year- 3rd year: CGPA- 2.25
3rd year- 4th year: CGPA- 2.50
Passing criterion for B.S.S.(Hons.) minimum CGPA 2.25

- A student failing to clear up the annual University or Institute's dues of the year of study shall not bepermitted to the next semester.
- The 4- year undergraduate program has to be completed by a maximum of 6 years from the date oforiginal entry.

3.6.2 Passing Criterion for M.S.S.

Passing criterion for M.S.S. is minimum CGPA 2.25

3.6.3 Class Attendance

A student must attend at least 75% of the classes of each course enrolled during a semester. If it is between 60% to 75%, students are not allowed to appear the exams with a payment of fee fixed by the university. If the attendance is below 60%, students will not be allowed to sit for final examination.

3.6.4 Repeating a course

A course may be taken only once for a grade, except when a student receives a failing grade that is recorded as ‚F' and a student, for non-academic reasons beyond his control, is unable to complete the full requirements of the course who will submit the valid and authenticated evidence of such reasons and the recommendation of the course teacher. Since passing of all courses

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individually is a degree requirement, the student must re-sit for the examination of the failing course within four weeks from the date of announcement of results of each semester. To be eligible for re-sit examination, a student must have to attend the semester final examination. Re-siting is allowed for only one course in each semester in B.S.S. (Honours) and only one course in M.S.S. programme in each semester. In both cases, fees for re-sit examination is applicable. A student will not be promoted if he/she fails to achieve the minimum required grade.

3.6.4 Unfair Means

The following would be considered as unfair means adopted during examinations and other contexts:

1. Communicating with fellow students for obtaining help
2. Copying from another student's script/report/paper
3. Copying from desk, or palm of a hand, or from other incriminating documents
4. Possession of any incriminating document whether used or not
5. Any approach in direct or indirect form to influence teacher for grade, and
6. Unruly behavior, which disrupts academic programme.

Adopting of unfair means may result in the dismissal of a student from the programme and expulsion of the student from the Institute and as such from the University.

3.6.5 Readmission

- A student failing to get the requisite grade points for one semester may seek readmission with the following batch.
- For readmission, a student shall have to apply within one month after the announcement of the result of the concerned semester.
- On readmission, grades earned earlier by a student in the class of readmission shall cease to exist and the students have to retake all the course work and examinations
- A student shall not be allowed readmission in more than two semester during the entire B.S.S. (Honours).
- In case of M.S.S. programme, there is no chance of readmission.

3.6.6 Drop Out

- If a student takes re-admission two times and after that a student earning ―F‖ grade in any course after taking re-sit examinations shall be dropped out of the B.S.S. (Honours) programme.
- In case of M.S.S., if a student fails to earn the pass grade even after re-sit examination (will be allowed for one course only) or if any student fails in two courses in one semester will be dropped out of the program.

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3.6.7 Grievance Regarding CGPA after publication of result

If a student is aggrieved by the evaluation and grading of academic work, he/she may file a grievance application to the Director. The director of the institute will involve the grievance settlement committee, which will be constituted by the academic committee of IHE from time to time.

The answer scripts of the aggrieved student will be reexamined after getting permission from the authority. A student has to pay BDT. 3000 to reexamine each answer script and it can be done at best for 2 courses.

The current grievance settlement committee of IHE is as follows-

1. Professor Dr. Syed Abdul Hamid- Chairman
2. Professor Nahid Akhter Jahan- Member
3. Professor Dr. Sharmeen Mobin Bhuiyan- Member
4. Dr. Shafiun Nahin Shimul- Member
   Associate Professor
5. Israt Jahan Kakoly- Member
   Assistant Professor

3.7 Fees and Charges

In addition to the tuition fees and other fees payable to the university, the students will be required to pay fees, which the Institute shall charge, for its development activities. Students will be charged additional fees for a computer laboratory, own seminar library, semester fund as well as co-curricular activities.

3.8 Issues not coved here

For the issues that are not covered here, the institute will follow the standard rules and regulations practiced in the University of Dhaka.

N.B. Rules and regulations contained here are subject to change. Students will be required to comply with thechanges in the rules and regulations as applicable to them.

Curriculum and Academic Rules for M.Phil and

Ph.D in Health Economics

Section 4

M.Phil And Ph.D

4.1: M. Phil. in Health Economics

Candidates for admission into the M. Phil. programme must possess a Master Degree in Health Economics or Economics or Business Studies or in a related discipline. They must possess a good second class in the above examination and shall have at least Second Division/Class in all earlier examinations (SSC, HSC and graduation examination).

4.2: Ph.D. in Health Economics

Candidates for admission into the Ph.D. degree programme must possess M.Phil. degree in Health Economics from IHE of the University of Dhaka or M.Phil. in Economics from the University of Dhaka or from any other recognized University. The candidates who have not obtained M.Phil. in Health Economics but have good research and/or teaching experience may be considered for direct enrollment into the Ph.D. programme of the IHE.
The Academic Board, on the recommendations of the Academic Committee of the Institute, may relax the qualifications.

The Rules contained here are subject to change. Students will be required to comply with the changes in the rules as applicable to them. In addition, the directives of the Board of Advanced Studies and Academic Council will prevail over IHE guidelines.

4.3: M.Phil. in Health Economics

701 (A) : Economics of Health Care

1. **Consumer Incentives:** Demand for health care issues of consumer theory, Uncertainty, Moral hazard.
2. **Supply of Health Care and Provider Incentives:** Cost and supply of health care, Efficiency, Hospital cost, Health care payment systems, Provider moral hazard (Supplier induced demand).
3. **Health Care Markets, Market Failures, and Regulations:** Market structures, Causes of Market failures, Role of public sector, Regulation .
4. **Financing of Health Care:** Alternative methods of health care financing, Uncertainty and health insurance.
5. **Equity, Efficiency and Poverty Reduction through Improved Health:** Issues of Health Sector Reforms in Developing Countries-Equity in delivery, Equity in financing, Equity VS. Efficiency Health and Economic Development.
6. **Comparative Analysis of Methods of Economic Evaluation**

Reference :

D.M. Cutler and R.J. Zeckhausei (2000). The anatomy of health insurance in A.J. Culyer and J.P. Newhouse (eds.) North-Holland Handbook of Health Economics, Elsevier.
Effective Health Care Bulletin No. 6 (1996) Hospital volume and health care outcomes, costs and patient access, Vol. 2, No. 8.
R. Ellis and T. Mc guire (1993), supply side cost sharing in health care, Journal of Economics

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Perspective 7. 135-151.

T. Besley and M. gouveia (1994), alternative systems of health care provision, Economic Policy, 19, 200-258.

T. rice (1992), An alternative framework for evaluating welfare losses in the health care market, Journal of Health Economics, 11, 85-92.

A.J. Culyer (1993), Health care insurance and provision, in N. Barr and D. Whynes (eds). Current Issues in the Economics of Welfare, Macmillan.

C. Propper (1995), Market structure and prices : the responses of hospitals in the U.K. National Health Service to Competition University of Bristol forthcoming, journal of public Economics.

C-T-A. Ma and T.G. McMuire (1997), Optimal health insurance and provider payment, American Economic Review, 87, 685-704.

C-T-A. Ma, (1994) Health care payment systems ; cost and quality incentives, Journal of Economics and Management Strategy, 3, 93-112.

E. van Doorslaer and A. Wagstaff (1998). Equity in the Finance and Delivery of Health Care, in M.L. Barer, T.E. Getzen and G.L. Stoddart, J. Wiley and Sons Ltd. Health, Health Care and Health Economics : Perspective of Distribution. E. van Hoorslaer et al. (2000), Equity in the delivery of health care in Europe and the US, Journal of Health Economics, 19, 553-583.

F.A. Sloan (ed.) (1995), Valuing health care, Cambridge University Press.

J. Robinson and H Luft (1988), Competition, regulation and hospital costs 1982 to 1986, Journal of the American Medical Association, 260, 2676-2681.

M. Barrow and A. Wagstaff (1989) Efficiency measurement in the public sector : an appraisal, Fiscal Studies , 10, 72-97.

M. Gaynor and W.B. Vogt (2000), Antitrust and competition in health care markets, in A.J. Culyer and J.P. Newhouse (eds.) North-Holland Handbook of Health Economics, Elsevier.

M . Mc Clellan (1995), The uncertain demand for medical care. A comment on Emmett Keeler, Journal of Health Economics, 14, 239-242.

M.F. Drummond, B. O' Brien, G.L. Stoddart and G.W. Torrance (1997), Methods for the economic evaluation of health care programmes (2nd edition), Oxford Medical Publications.

M.R. Gold, J.E. Siegel, L.B. Russell and M.C. Weinstein (eds.) (1996). Cost-effectiveness in health and medicine, Oxford University Press.

R. Ellis and T. McGuire (1996). Hospital response to prospective payments ; moral hazard, selection and practice style effects, Journal of Health Economics, 15, 257-277.

V. Aletras, A. Jones and T. Sheldon (1997) Economics of Scale and Scope, in B. Ferguson, T. Sheldon and J. Posnett (eds.) Concentration and Choice in Health Care, Royal Society of Medicine Press.

701 (B) : Management of Health Services

1. **Health Systems Management:** The policy, aims and trade-off : Equity, efficiency, effectiveness and health maximization, different health systems and provisions of health care under different health systems.

2. **Health Policy and Planning:** Perspective of health policy and planning. Theories of health planning. primary Health Care (PHC) and Essential Services Package (ESP).

3. **Health Policy of Bangladesh:** Bangladesh Health Plans including HNSP and HNPSP. Reforms from historical perspective : Global Health Reforms National Health and Population Policy of Bangladesh.

4. **Human Resource Management (HRM) in Health Sector:** Human Resource Management of Health Sector. Present Status of HRM. Problems of HRM and HRD. Methods of Human Resource Planning.

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5. **Global Health Initiatives:** International Conference of Population and Development (ICPD). Millennium Development Goals (MDG) and Poverty Reduction Strategy Paper (PRSP).

Reference :

A. Green (1988). An Introduction to Health Planning in Developing Countries, Oxford, OUP.
B. Abel Smith (1994). An Introduction to Health Policy, Planning and Financing ; London, Longmans. MOP (2003). Poverty Reduction Strategy Papers (PRSP), Ministry of planning, Govt. of Bangladesh MOHFW (2002). Human Resource Management in Health. Ministry of Health and Family Welfare. Govt. of Bangladesh.

UN (1994). International Conference on population and Development (ICPD). Cairo, Egypt. UN (2000). Millenium Development Goals (MDG), United Nations.
W. Reinke (ed.) (1988). Health Planning for Effective Management, Oxford, OUP.

702 (A) : Applied Econometrics

1. **CLRM Assumptions:** Violations, Detection, Problems and Corrections- BLUE property and CLRM assumptions, Multicollinearity, Hetero-scedasticity, Autocorrelation, Specification Bias.
2. **Simultaneous Equations Models:** Nature, Bias, Identification Problems, Estimation.
3. **Qualitative Response Models:** Dummy variable, Simple LOGIT and Multinomial LOGIT models, Simple PROBIT and Ordered PROBIT models, Censored samples and TOBIT models.
4. **Panel Data Methods:** Simple panel Data methods, Advanced panel Data Methods, Estimation.
5. **Advanced Time Series:** Basic Concepts of TS, Unit Root Tests; ACF, DF, ADF and PP tests Spurious Regression; Difference and Trend Stationary Processes, Cointegration; Concepts, and Tests of Co integration (EG. AEG and CRDW Tests), Restricted and Unrestricted Error Correction Models, Granger Causality Test. Modeling Time Series data; General-to-specific and specific to-general methodology, forecasting with different time series models.
6. **Application of Econometric Tools:** Carrying out an empirical project using data.

Reference :

Damodar N. Gujarati (1995). Basic Econometrics (3rd edition), McGraw-Hill, Inc.
J Johnston (1997). Econometric Methods (4th edition), McGrow-hill.
Jeffrey M. Wooldridge (2000). Introductory Econometrics: A Modern Approach, South- Western College publishing (Thompson-Learning). R.I.D. Haris (1995). Using Cointegration Analysis in Econometric Modeling (1st edition), Prentice Hall Inc.
William H. Greene (2000). Econometric. Theory (4th edition), Prentice Hall

International, Inc.

702 (B) : Research Methodology

1. An Overview of Research: Research and purposes of research; Research & Evaluation; Health Services Research & Management Research.
2. Steps in Scientific Research: Review of literature research problem/issue, Selection of research problem; Conceptual framework/ hypotheses/Research objectives; Methods of data collection; Data analysis; Write-up of research report.
3. Sampling, and Survey Design
4. Qualitative, Quantitative and Epidemiological Studies
5. Techniques of Economic Evaluation, Measurement of Disease Burden

Reference :

Bernard (2000). Social Research Methods.
Booth et al. (1995). The Craft of Research.
Fink (1993). Evaluation Fundamentals: Guiding Health programs.   Research & Policy.
Greenfield (ed) (1996). Research Methods: Guidance for Postgraduates.
Jenkinson (ed.) (1997). Assessment and Evaluation of Health and Medical Care : A Methods Text. Mc.Conway (ed.) (1994). Studying Health and Disease.
Moser and Kolton (1971). Survey Methods in Social Investigation (2nd ed.)
Sim and Wright (2000). Research in Health Care: Concepts, Designs and Methods.
Usherwood (1996). Introduction to Project Management in Health Research: A Guide for New Researchers.