Technological Economics Abbreviated Course Syllabus

Course Number:	BB703A
Course Name:	Technological Economics
Instructors:	Bian Yali
Students:	Business administration 2019
Required Text:	1.INTRODUCTION TO TECHCICAL ECONOMICS,YU XIAOFEN, Higher Education Press, 2018,8 2.TECHNICAL ECONOMICS, FANG YONG, China Machine Press, 2018,11 3.TECHCICAL ECONOMICSECONOMICS, LIU XIAOJUN,Science Press ,2017
Course Description:	Technological Economics is the core course of business administration.The teaching purpose and task of the course of technical economics is to enable students to use the basic theories and methods of technical economics to evaluate the economic feasibility of various engineering projects and technical schemes, and select the economically feasible and optimal scheme from them, so as to provide a theoretical basis for improving the economic benefits of schemes in an all-round way and point out the direction for the promotion and application of advanced technologies.

Topic Outline:		Hours/Minutes
I.	Overview of Technological Economics	2
A.	The relationship between technology and economy ① What is technology？ ② What is the economy？ ③ What is the relationship between technology and economy？	
B.	Research tasks of technical economics: ① Study the economic effects of technical solutions to find the best economic results ②Research on the mutual promotion and coordinated development of technology and economy ③Research technological innovation, promote technological progress, promote enterprise development and national economic growth	
C.	Engineers must have a basic knowledge of technical economics	
D .	General process of technical and economic analysis	
II.	Technological Innovation	2
A.	Overview of technological innovation: ① Overview of technological innovation ② The concept and connotation of technological innovation ③ Discrimination of related concepts	

B.	The process model of technological innovation:	
	① Overview of technological innovation process	
	② The main mode of technological innovation process	
C.	Technology innovation strategy and its choice:	
	① Independent innovation strategy model	
	② Imitate the innovation strategy model	
	③ Cooperative innovation strategy model	
III.	Basic elements of economic evaluation	10
A.	Economic Effect and Cash Flow:	
	① The concept and classification of Economic Effect	
	② The concept and function of Cash Flow	
	③ Cash Flow chart	
B.	Project investment	
C.	Depreciation of fixed assets:	
	① The meaning of depreciation of fixed assets	
	② Average life method	
	③ Method of workload	
	④ Accelerated depreciation method	
D.	Cost	
E.	Tax Revenue	
F.	Sales revenue and Profit	
G.	Calculation of the time value of funds and its equivalent:	
	① Time value of funds	
	② Calculation of equivalent funds	
	③ Application of capital equivalence calculation	
IV.	Basic methods of economic evaluation	10
A.	Payback period method	
	① Static payback period	
	② Dynamic payback period	
	③ Investment payback period index evaluation	
B.	Net present value method:	
	① Net present value	
	② Net final value	
	③ Net annual value	
C.	Internal rate of return:	
	① The concept of internal rate of return	
	② Calculation of internal rate of return	
	③ The criterion of internal rate of return	
	④ Economic implications of internal rate of return	
D.	Benefit-cost ratio	
E.	Multi-program economic evaluation method:	
	① Alternative type	
	② An economic evaluation method for mutually exclusive schemes	
	③ Economic evaluation method of independent scheme	

V.	Uncertainty and risk analysis	5
A.	Overview of investment risks and uncertainties:	
	① The meaning of investment risk and uncertainty	
	② Uncertainty factors in technical economic activities	
	③ Types and procedures of uncertainty analysis methods	
B.	Breakeven analysis:	
	① Overview of breakeven analysis	
	② Linear breakeven analysis	
	③ Breakeven analysis of multiple varieties	
C.	Sensitivity analysis:	
	① Overview of Sensitivity analysis	
	② Single factor sensitivity analysis	
	③ Application points and limitations of sensitivity analysis	
VI.	Economic analysis of equipment renewal and leasing	5
A.	Equipment wear and compensation:	
	① Equipment wear	
	② Compensation for equipment wear	
	③ Life of equipment	
B.	Economic analysis of equipment replacement	
	① Principles of equipment update	
	② Decision-making method for equipment renewal	
C.	Economic analysis of equipment leasing:	
	① Overview of Equipment Leasing	
	② Method of lease	
VII.	Value engineering	4
A.	Basic principles of value engineering	
	① The generation and development of value engineering	
	② The basic concept of value engineering	
	③ The characteristics and functions of value engineering	
	④ The working procedure of value engineering	
B.	The basic content of value engineering:	
	① Selection of value engineering research objects	
	② Collection of information on value engineering objects	
	③ Analysis of function	
	④ Evaluation of function	
C.	Program creation and implementation	
	① Creation of a Plan	
	② Evaluation of the program	
	③ Comprehensive selection of programs	
	④ Trials and proposals	
	⑤ Inspection, evaluation and acceptance	
D.	Value engineering case	
VIII.	Feasibility study of construction project	1
A.	Overview of Feasibility Study	

B.	Financial evaluation of construction projects	
C.	Evaluation of national economy	
IX.	Evaluation of sustainable development of construction projects	1
A.	The concept and connotation of sustainable development	
B.	Overview of sustainable development evaluation of construction projects	
	Total Sessions (Coverage Hours)	40

Summary of UG CPC Topics Covered in this Course:		Hours/Minutes
a.	Marketing	0
b.	Finance	0
c.	Accounting	0
d.	Management	20
e.	Legal environment of Business	0
f.	Economics	0
g.	Business Ethics	0
h.	Global Dimensions of Business	0
i.	Business Communications	0
j.	Information System	0
k.	Quantitative Techniques and Statistics	15
l.	Business Policies	5
m.	Comprehensive or Integrating Experience	0
	Total Estimated CPC Coverage Hours	40