

中國醫藥大學一百學年度第一學期教學進度表

科目：流行病學建模與分析（一）

學分數：2學分

負責教師：謝英恒

修別：選修

系別班別：公共衛生學系碩士班1年A班

上課時間：週四[34節]

上課教室：教學大樓15樓1504室

一、教學目標：

This course is designed for graduate students in public health or in applied mathematics and statistics who wish to understand mathematical modeling and analysis relating to their respective research or to develop models for their own work. There will also be a tutorial session on simple mathematical modeling softwares.

二、課程內容：

日期	課程內容	授課教師
2011/09/15	Course Introduction and Fundamental Concepts (lecture 0)	謝英恒
2011/09/22	Exponential and logistic growth: simple examples of difference and differential equation models (lecture 1)	謝英恒
2011/09/29	A Simple Model for Real-time Prediction of Outbreak Severity (lecture 2)	謝英恒
2011/10/06	Introduction to epidemic models: Some Simple Epidemics (lecture 3)	謝英恒
2011/10/13	SIS and SIR models (lecture 4)	謝英恒
2011/10/20	SIS and SIR models (lecture 4)	謝英恒
2011/10/27	Mass action and Standard Incidence (lecture 5)	謝英恒
2011/11/03	Basic reproduction number, R_0 (lecture 6)	謝英恒
2011/11/10	Course Project Proposals due	謝英恒
2011/11/17	期中考試	謝英恒
2011/11/24	Ross-MacDonald Malaria Model (lecture 7)	謝英恒
2011/12/01	(Tutorial) Fundamental Concepts II (lecture 8)	謝英恒
2011/12/08	An Overview on Mathematical Models (lecture 9)	謝英恒
2011/12/15	An Overview on Mathematical Models (lecture 9)	謝英恒
2011/12/22	Public health-related modeling: Evaluation of interventions measures (lecture 10)	謝英恒
2011/12/29	Public health-related modeling: Evaluation of interventions measures (lecture 10)	謝英恒
2012/01/05	Project Presentations	謝英恒
2012/01/12	Project Presentations	謝英恒

三、授課方式:

Class sessions will primarily consist of lectures and a class report. Introduction of elementary mathematics tools to be used, including difference equations, linear algebra, and calculus, will be given. Topics taught will include design and construction of appropriate mathematical models, equilibrium and stability analysis, determination and interpretation of the basic reproduction number of an infection and a

四、評分標準:

博士班: 期中考試 30%, Course project 70%.

碩士班: 期中考試 50%, Course project 50%.

五、參考書目

1. Anderson, R., and May, R. (1991) *Infectious Diseases of Humans: Dynamics and Control*. Oxford University Press, Oxford.

2. Brauer, F., van den Driessche, P., and Wu, J. (2008) *Mathematical Epidemiology*. Springer-Verlag, Berlin.

中國醫藥大學一百學年度第一學期教學進度表

Course Name : Modeling & analysis of infectious disease epidemiology (I)

Time : 週四[34節]

Dept./Year : 公共衛生學系碩士班1年A班

Credits : 2學分

Teacher: 謝英恒

Category (core/elective/internship/etc.) : 選修

Classroom : 教學大樓15樓1504室

Objective :

This course is designed for graduate students in public health or in applied mathematics and statistics who wish to understand mathematical modeling and analysis relating to their respective research or to develop models for their own work. There will also be a tutorial session on simple mathematical modeling softwares.

Syllabus :

Date	Course Content	Teacher
2011/09/15	Course Introduction and Fundamental Concepts (lecture 0)	謝英恒
2011/09/22	Exponential and logistic growth: simple examples of difference and differential equation models (lecture 1)	謝英恒
2011/09/29	A Simple Model for Real-time Prediction of Outbreak Severity (lecture 2)	謝英恒
2011/10/06	Introduction to epidemic models: Some Simple Epidemics (lecture 3)	謝英恒
2011/10/13	SIS and SIR models (lecture 4)	謝英恒
2011/10/20	SIS and SIR models (lecture 4)	謝英恒
2011/10/27	Mass action and Standard Incidence (lecture 5)	謝英恒
2011/11/03	Basic reproduction number, R_0 (lecture 6)	謝英恒
2011/11/10	Course Project Proposals due	謝英恒
2011/11/17	Midterm examination	謝英恒
2011/11/24	Ross-MacDonald Malaria Model (lecture 7)	謝英恒
2011/12/01	(Tutorial) Fundamental Concepts II (lecture 8)	謝英恒
2011/12/08	An Overview on Mathematical Models (lecture 9)	謝英恒
2011/12/15	An Overview on Mathematical Models (lecture 9)	謝英恒
2011/12/22	Public health-related modeling: Evaluation of interventions measures (lecture 10)	謝英恒
2011/12/29	Public health-related modeling: Evaluation of interventions measures (lecture 10)	謝英恒
2012/01/05	Project Presentations	謝英恒
2012/01/12	Project Presentations	謝英恒

Teaching Method :

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Evaluation :

博士班：期中考試 30%，Course project 70%.

碩士班：期中考試 50%，Course project 50%.

References :

1. Anderson, R., and May, R. (1991) *Infectious Diseases of Humans: Dynamics and Control*. Oxford University Press, Oxford.

2. Brauer, F., van den Driessche, P., and Wu, J. (2008) *Mathematical Epidemiology*. Springer-Verlag, Berlin.

學科主任或(課程召集人)簽章:_____ 系主任簽章:_____