

## 國立交通大學課程綱要

開課單位	電子工程學系	授課教師	霍斯科	授課學期	96 學年度 1 學期
課程名稱	微分方程			人數上限	不限
英文名稱	Engineering Mathematics: Differential Equations				
學分數	3	上課時數	3	先修課程	微積分
<p>課程目標：</p> <p>本課程將增進學生對微分方程的瞭解與興趣。微分方程對研究人員而言是一個極重要的工具。本課程將幫助學生瞭解何為微分方程的解，並教導學生如何利用微分方程回答相關的問題。</p>					
<p>課程綱要：</p> <ol style="list-style-type: none"> <li>1. 導論</li> <li>2. 一階微分方程式</li> <li>3. 二階與高階線性方程式</li> <li>4. 拉普拉斯轉換</li> <li>5. 微分方程式的線性系統</li> <li>6. 冪級數法</li> <li>7. 傅利葉級數, 偏微分等式, 邊界值問題</li> </ol>					
<p>參考書目：</p> <ol style="list-style-type: none"> <li>1. Martha L. Abell and James P. Braselton, Modern Differential Equations, Second Edition (2001)</li> <li>2. R. K. Miller: Introduction to Differential Equations (Pearson Education Taiwan Ltd. Taiwan, 2002).</li> </ol> <p>教科書：</p> <p>C. Henry Edwards and David E. Penney, Elementary Differential Equations with Boundary Value Problems, 5th Edition, 2004.</p>					
<p>課程進行方式、課程要求及評分標準：</p>					

\* 如需本課程綱要表格之電子檔，請至課務組網頁－>各類申請表下載。

\* 請用電腦打字成檔案，於每學期末、初選前（1月初及6月初），利用選課系統（<http://cos.adm.nctu.edu.tw/>）之「課程綱要上傳」將課程綱要 update 上網。

\* 學生在選課時間，點選當期課號，即可查看課程綱要。

## **Engineering Mathematics: Differential Equations**

Conductor: Alex Voskoboynikov  
Class: 2A, 2B (in English)  
Credits: 3 (Hours for Weekly Study: 3)  
Pre-requisite Courses: Calculus.

Text Book: C. Henry Edwards and David E. Penney, Elementary Differential Equations with Boundary Value Problems, 5th Edition, 2004.

Reference Books: 1. Martha L. Abell and James P. Braselton, Modern Differential Equations, Second Edition (2001)  
2. R. K. Miller: Introduction to Differential Equations (Pearson Education Taiwan Ltd. Taiwan, 2002).

This course is designed to provide students with a comprehensive introduction to the concepts and ideas that form the basis of solutions of differential equations – an essential tool of researchers and developers. The course will help students to understand what the solutions mean and how differential equations can be used to answer pertinent questions.

Course Contents:

1. Introduction.
2. First-Order Differential Equation.
3. Linear Equations of the Second and Higher Order.
4. Laplace Transform.
5. Linear Systems of Differential Equations.
6. Power Series Method.
7. Fourier Series, Partial Differential Equations, and Boundary Value Problem.