

Undergraduate Texts in Mathematics

UTM

J. David Logan

Applied Partial Differential Equations

Third Edition

 Springer

Applied Partial Differential Equations Logan Solutions

J Dewey



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Applied Partial Differential Equations J. David Logan, 2004-05-11 This text is written for the standard one semester undergraduate course in elementary partial differential equations. The topics include derivations of some of the standard equations of mathematical physics including the heat equation, the wave equation, and Laplace's equation, and methods for solving those equations on bounded and unbounded domains. Methods include eigenfunction expansions or separation of variables and methods based on Fourier and Laplace transforms. Introduction To Partial Differential Equations (With Maple), An: A Concise Course Zhilin Li, Larry Norris, 2021-09-23 The book is designed for undergraduate or beginning level graduate students and students from interdisciplinary areas including engineers and others who need to use partial differential equations, Fourier series, Fourier and Laplace transforms. The prerequisite is a basic knowledge of calculus, linear algebra, and ordinary differential equations. The textbook aims to be practical, elementary, and reasonably rigorous; the book is concise in that it describes fundamental solution techniques for first order, second order, linear partial differential equations for general solutions, fundamental solutions, solution to Cauchy initial value problems, and boundary value problems for different PDEs in one and two dimensions and different coordinate systems. Analytic solutions to boundary value problems are based on Sturm-Liouville eigenvalue problems and series solutions. The book is accompanied with enough well tested Maple files and some Matlab codes that are available online. The use of Maple makes the complicated series solution simple, interactive, and visible. These features distinguish the book from other textbooks available in the related area.

Applied Partial Differential Equations J. David Logan, 2012-12-06 This textbook is for the standard one semester junior/senior course that often goes by the title Elementary Partial Differential Equations or Boundary Value Problems. The audience usually consists of students in mathematics, engineering, and the physical sciences. The topics include derivations of some of the standard equations of mathematical physics including the heat equation, the wave equation, and the Laplace's equation, and methods for solving those equations on bounded and unbounded domains. Methods include eigenfunction expansions or separation of variables and methods based on Fourier and Laplace transforms. Prerequisites include calculus and a post-calculus differential equations course. There are several excellent texts for this course so one can legitimately ask why one would wish to write another. A survey of the content of the existing titles shows that their scope is broad and the analysis detailed, and they often exceed five hundred pages in length. These books generally have enough material for two, three, or even four semesters. Yet many undergraduate courses are one semester courses. The author has often felt that students become a little uncomfortable when an instructor jumps around in a long volume searching for the right topics or only partially covers some topics but they are secure in completely mastering a short, well-defined introduction. This text was written to provide a brief one semester introduction to partial differential equations.

A First Course in Differential Equations John David Logan, 2006 While the standard sophomore course on elementary differential equations is typically one semester

in length most of the texts currently being used for these courses have evolved into calculus like presentations that include a large collection of methods and applications packaged with state of the art color graphics student solution manuals the latest fonts marginal notes and web based supplements All of this adds up to several hundred pages of text and can be very expensive Many students do not have the time or desire to read voluminous texts and explore internet supplements That's what makes the format of this differential equations book unique It is a one semester brief treatment of the basic ideas models and solution methods Its limited coverage places it somewhere between an outline and a detailed textbook The author writes concisely to the point and in plain language Many worked examples and exercises are included A student who works through this primer will have the tools to go to the next level in applying ODEs to problems in engineering science and applied mathematics It will also give instructors who want more concise coverage an alternative to existing texts This text also encourages students to use a computer algebra system to solve problems numerically It can be stated with certainty that the numerical solution of differential equations is a central activity in science and engineering and it is absolutely necessary to teach students scientific computation as early as possible Templates of MATLAB programs that solve differential equations are given in an appendix Maple and Mathematica commands are given as well The author taught this material on several occasions to students who have had a standard three semester calculus sequence It has been well received by many students who appreciated having a small definitive parcel of material to learn Moreover this text gives students the opportunity to start reading mathematics at a slightly higher level than experienced in pre calculus and calculus not every small detail is included Therefore the book can be a bridge in their progress to study more advanced material at the junior senior level where books leave a lot to the reader and are not packaged with elementary formats J David Logan is Professor of Mathematics at the University of Nebraska Lincoln He is the author of another recent undergraduate textbook Applied Partial Differential Equations 2nd Edition Springer 2004 [Advances in Applied Mathematical Analysis and Applications](#) Mangey Ram, Tadashi Dohi, 2022-09-01 In recent years applied mathematics has been used in all novel disciplines of scientific development Advances in Applied Mathematical Problems summarizes interdisciplinary work within the field of applied mathematics The topics discussed in the book include Similarity Solutions of Spherical Shock Waves in a Self Gravitating Ideal Gas Dual Solutions for Finite Element Analysis of Unsteady Hydromagnetic Stagnation Point Flow of Water Nanofluid Generated by Stretching Sheet Multiparametric modeling of carbon cycle in temperate wetlands for regional climate change analysis using satellite data An Intelligent Neuro Fuzzy System for Pattern Classification Fuzzy inventory model with demand deterioration and inflation a comparative study through NGTFN and CNTFN Summability and its application for the stability of the system Design Of Manufacturing Control And Automation Systems SEIR Application for Crop through Water and Soil Texture Advances in radial basis functions Modeling For Time Period Of Natural Frequency For Non Homogeneous Square Plate With Variable Thickness And Temperature Effect A Study On Metric Fixed Point Theorems Satisfying Integral Type

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An Introduction to Nonlinear Partial Differential Equations J. David Logan, 2008-04-11 Praise for the First Edition This book is well conceived and well written The author has succeeded in producing a text on nonlinear PDEs that is not only quite readable but also accessible to students from diverse backgrounds

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Mathematical Reviews ,2004 **Journal of Partial Differential Equations** ,2004

Applied Mathematics J. David Logan, 1987 Presents current topics in applied mathematics such as singular perturbation nonlinear wave propagation bifurcation similarity methods and the numerical solution of partial differential equations It emphasizes the interdependency of mathematics and its application to physical phenomena and is written in a style accessible to readers with a wide range of interests and backgrounds There is also coverage of scaling and dimensional

analysis calculus of variations Fourier and transform methods for partial differential equations and integral equations

American Book Publishing Record Cumulative 1998 R R Bowker Publishing,1999-03 **A First Course in Differential Equations** J David Logan,2012-12-25 This concise and up to date textbook is designed for the standard sophomore course in differential equations It treats the basic ideas models and solution methods in a user friendly format that is accessible to engineers scientists economists and mathematics majors It emphasizes analytical graphical and numerical techniques and it provides the tools needed by students to continue to the next level in applying the methods to more advanced problems There is a strong connection to applications with motivations in mechanics and heat transfer circuits biology economics chemical reactors and other areas Moreover the text contains a new elementary chapter on systems of differential equations both linear and nonlinear that introduces key ideas without matrix analysis Two subsequent chapters treat systems in a more formal way Briefly the topics include First order equations separable linear autonomous and bifurcation phenomena Second order linear homogeneous and non homogeneous equations Laplace transforms and Linear and nonlinear systems and phase plane properties *Communications on Applied Nonlinear Analysis* ,2008 **Cumulated Index to the Books** ,1999 **Who's who in Technology** ,1986 **NBS Special Publication** ,1973 **Comprehensive Dissertation Index, 1861-1972: Engineering: general and aeronautical** Xerox University Microfilms,1973 **Reviews in Partial Differential Equations, 1980-86, as Printed in Mathematical Reviews** ,1988 'American Book Publishing Record' Cumulative R. R. Bowker LLC,1978 **Who's who in Technology: Who's who in physics & optics** ,1986

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