

Study Guide For Electromagnetic Compatibility Engineers

Substation Automation Systems: Design and Implementation aims to close the gap created by fast changing technologies impacting on a series of legacy principles related to how substation secondary systems are conceived and implemented. It is intended to help those who have to define and implement SAS, whilst also conforming to the current industry best practice standards. Key features: Project-oriented approach to all practical aspects of SAS design and project development. Uniquely focuses on the rapidly changing control aspect of substation design, using novel communication technologies and IEDs (Intelligent Electronic Devices). Covers the complete chain of SAS components and related equipment instead of purely concentrating on intelligent electronic devices and communication networks. Discusses control and monitoring facilities for auxiliary power systems. Contributes significantly to the understanding of the standard IEC 61850, which is viewed as a "black box" for a significant number of professionals around the world. Explains standard IEC 61850 – Communication networks and systems for power utility automation – to support all new systems networked to perform control, monitoring, automation, metering and protection functions. Written for practical application, this book is a valuable resource for professionals operating within different SAS project stages including the: specification process; contracting process; design and engineering process; integration process; testing process and the operation and maintenance process.

A comprehensive resource that explores electromagnetic compatibility (EMC) for aerospace systems Handbook of Aerospace Electromagnetic Compatibility is a groundbreaking book on EMC for aerospace systems that addresses both aircraft and space vehicles. With contributions from an international panel of aerospace EMC experts, this important text deals with the testing of spacecraft components and subsystems, analysis of crosstalk and field coupling, aircraft communication systems, and much more. The text also includes information on lightning effects and testing, as well as guidance on design principles and techniques for lightning protection. The book offers an introduction to E3 models and techniques in aerospace systems and explores EMP effects on and technology for aerospace systems. Filled with the most up-to-date information, illustrative examples, descriptive figures, and helpful scenarios, Handbook of Aerospace Electromagnetic Compatibility is designed to be a practical information source. This vital guide to electromagnetic compatibility: • Provides information on a range of topics including grounding, coupling, test procedures, standards, and requirements • Offers discussions on standards for aerospace applications • Addresses aerospace EMC through the use of testing and theoretical approaches Written for EMC engineers and practitioners, Handbook of Aerospace Electromagnetic Compatibility is a critical text for understanding EMC for aerospace systems.

As the number of electrical devices in use continues to grow, so do the challenges of ensuring the electromagnetic compatibility (EMC) of products and systems. Fortunately, engineers have at their disposal an array of approximations, models, and rules-of-thumb to help them meet those challenges. Unfortunately, the number of these tools and guidelines is overwhelming, and worse still is the thought of investigating their origins and confirming their results. The Electromagnetic Compatibility Handbook is an unprecedented compilation of the many approximations, guidelines, models, and rules-of-thumb used in EMC analyses, complete with their sources and their limitations. The book presents these in an efficient question-and-answer format and incorporates an extremely comprehensive set of tables and figures. The author has either derived from basic principles or obtained and verified from their original sources all of the expressions in the tables. Mathcad was used to generate most of the plots and solve many of the equations, and the author includes the Mathcad programs for many of these so users can clearly see the variable assignments, assumptions, and equations. Designed to be of long-lasting value to engineers, researchers, and students, the Electromagnetic Compatibility Handbook is ideal both for quick reference and as a textbook for upper-level and graduate electrical engineering courses.

Grounding design and installation is critical for the safety and performance of any electrical or electronic system. Blending theory and practice, this is the first book to provide a thorough approach to grounding from circuit to system. It covers: grounding for safety aspects in facilities, lightning, and NEMP; grounding in printed circuit board, cable shields, and enclosure grounding; and applications in fixed and mobile facilities on land, at sea, and in air. It's an indispensable resource for electrical and electronic engineers concerned with the design of electronic circuits and systems.

Electromagnetic Compatibility Handbook

Electromagnetic Compatibility for Space Systems Design

Electromagnetic Compatibility Pocket Guide

CISSP: Certified Information Systems Security Professional Study Guide

Principles, Measurements, Technologies, and Computer Models

Test and expand your knowledge of electromagnetic compatibility (EMC) topics! Each week, the LearnEMC website publishes an EMC Question of the Week authored by Dr. Todd Hubing. The questions are multiple-choice and cover various topics related to electromagnetic compatibility (EMC). The answers are informative and sometimes highlight common misconceptions. This book is a compilation of questions and answers appearing on the website from 2017 through the end of 2020.

A landmark text thoroughly updated, including a new CD As digital devices continue to be produced at increasingly lower costs and with higher speeds, the need for effective electromagnetic compatibility (EMC) design practices has become more critical than ever to avoid unnecessary costs in bringing products into compliance with governmental regulations. The Second Edition of this landmark text has been thoroughly updated and revised to reflect these major developments that affect both academia and the electronics industry. Readers familiar with the First Edition will find much new material, including: • Latest U.S. and international regulatory requirements • PSpice used throughout the textbook to simulate EMC analysis solutions • Methods of designing for Signal Integrity • Fortran programs for the simulation of Crosstalk supplied on a CD • OrCAD(r) PSpice(r) Release 10.0 and Version 8 Demo Edition software supplied on a CD • The final chapter on System Design for EMC completely rewritten • The chapter on Crosstalk rewritten to simplify the mathematics Detailed, worked-out examples are now included throughout the text. In addition, review exercises are now included following the discussion of each important topic to help readers assess their grasp of the material. Several appendices are new to this edition including Phasor Analysis of Electric Circuits, The Electromagnetic Field Equations and Waves, Computer Codes for Calculating the Per-Unit-Length Parameters and Crosstalk of Multiconductor Transmission Lines, and a SPICE (PSPICE) tutorial. Now thoroughly updated, the Second Edition of Introduction to Electromagnetic Compatibility remains the textbook of choice for university/college EMC courses as well as a reference for EMC design engineers. An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

CISSP Certified Information Systems Security Professional Study Guide Here's the book you need to prepare for the challenging CISSP exam from (ISC) 2. This third edition was developed to meet the exacting requirements of today's security certification candidates, and has been thoroughly updated to cover recent technological advances in the field of IT security. In addition to the consistent and accessible instructional approach that readers have come to expect from Sybex, this book provides: Clear and concise information on critical security technologies and topics Practical examples and insights drawn from real-world experience Expanded coverage of key topics such as biometrics, auditing and accountability, and software security testing Leading-edge exam preparation software, including a testing engine and electronic flashcards for your PC, Pocket PC, and Palm handheld You'll find authoritative coverage of key exam topics including: Access Control Systems & Methodology Applications & Systems Development Business Continuity Planning Cryptography Law, Investigation, & Ethics Operations Security & Physical Security Security Architecture, Models, and Management Practices Telecommunications, Network, & Internet Security

Anyone who has operated, serviced, or designed an automobile or truck in the last few years has most certainly noticed that the age of electronics in our vehicles is here! Electronic components and systems are used for everything from the traditional entertainment system to the latest in "drive by wire", to two-way communication and navigation. The interesting fact is that the automotive industry has been based upon mechanical and materials engineering for much of its history without many of the techniques of electrical and electronic engineering. The emissions controls requirements of the 1970's are generally recognized as the time when electronics started to make their way into the previous mechanically based systems and functions. While this revolution was going on, the electronics industry developed issues and concepts that were addressed to allow interoperation of the systems in the presence of each other and with the external environment. This included the study of electromagnetic compatibility, as systems and components started to have influence upon each other just due to their operation. EMC developed over the years, and has become a specialized area of engineering applicable to any area of systems that included electronics. Many well-understood aspects of EMC have been developed, just as many aspects of automotive systems have been developed. We are now at a point where the issues of EMC are becoming more and more integrated into the automotive industry.

Electromagnetic Compatibility in Power Electronics

Guide to the Use of ITU-T Publications Produced by Study Group 5 Aimed at Achieving Electromagnetic Compatibility and Safety

Applied Electromagnetics and Electromagnetic Compatibility

Study Guide for Electromagnetic Compatibility Engineers

The Contour Integral Method

Praise for Noise Reduction Techniques IN electronic systems "Henry Ott has literally 'written the book' on the subject of EMC. . . . He not only knows the subject, but has the rare ability to communicate that knowledge to others." —EE Times **Electromagnetic Compatibility Engineering is a completely revised, expanded, and updated version of Henry Ott's popular book Noise Reduction Techniques in Electronic Systems. It reflects the most recent developments in the field of electromagnetic compatibility (EMC) and noise reduction and their practical applications to the design of analog and digital circuits in computer, home entertainment, medical, telecom, industrial process control, and automotive equipment, as well as military and aerospace systems. While maintaining and updating the core information—such as cabling, grounding, filtering, shielding, digital circuit grounding and layout, and ESD—that made the previous book such a wide success, this new book includes additional coverage of: Equipment/systems grounding Switching power supplies and variable-speed motor drives Digital circuit power distribution and decoupling PCB layout and stack-up Mixed-signal PCB layout RF and transient immunity Power line disturbances Precompliance EMC measurements New appendices on dipole antennae, the theory of partial inductance, and the ten most common EMC problems The concepts presented are applicable to analog and digital circuits operating from below audio frequencies to those in the GHz range. Throughout the book, an emphasis is placed on cost-effective EMC designs, with the amount and complexity of mathematics kept to the strictest minimum. Complemented with over 250 problems with answers, Electromagnetic Compatibility Engineering equips readers with the knowledge needed to design electronic equipment that is compatible with the electromagnetic environment and compliant with national and international EMC regulations. It is an essential resource for practicing engineers who face EMC and regulatory compliance issues and an ideal textbook for EE courses at the advanced undergraduate and graduate levels.**

This new edition of the Study Guide for the INARTE EMC Certification Exam for Engineers & Technicians includes 200 updated printed sample problems with answers and comments, access to an additional 60 video sample problems with complete solutions, and a collection of reference material, including acronyms, standards information, important equations and theory. Sample problems and reference materials are organized by topic to help you quickly find the information you need. The INARTE EMC exam is open-book, and this printed study guide is designed to be used as a reference during the exam.

This document provides the comprehensive list of Chinese National Standards - Category: GB; GB/T, GBT.

Since the concept was first proposed at the end of the 20th Century, metamaterials have been the subject of much research and discussion throughout the wave community. More than 10 years later, the number of related published articles is increasing significantly. On the one hand, this success can be attributed to dreams of new physical objects which are the consequences of the singular properties of metamaterials. Among them, we can consider the examples of perfect lensing and invisibility cloaking. On the other hand, metamaterials also provide new tools for the design of well-known wave functions such as antennas for electromagnetic waves. The goal of this book is to propose an overview of the concept of metamaterials as a perspective on a new practical tool for wavelens and engineering. This includes both the electromagnetic spectrum, from microwave to optics, and the field of acoustic waves. Contents 1. Overview of Microwave and Optical Metamaterial Technologies, Didier Lippens. 2. MetaLines: Transmission Line Approach for the Design of Metamaterial Devices, Bruno Sauviac. 3. Metamaterials for Non-Radiative Microwave Functions and Antennas, Divitha Seetharamo and Bruno Sauviac. 4. Toward New Prospects for Electromagnetic Compatibility, Divitha Seetharamo. 5. Dissipative Loss in Resonant Metamaterials, Philippe Tassin, Thomas Koschmy, and Costas M. Soukoulis. 6. Transformation Optics and Antennas, André de Lustrac, Shah Nawaz Burokur and Paul-Henri Tichit. 7. Metamaterials for Control of Surface Electromagnetic and Liquid Waves, Sébastien Guenneau, Mohamed Farhat, Muamer Kadic, Stefan Enoch and Romain Quidant. 8. Classical Analog of Electromagnetically Induced Transparency, Philippe Tassin, Thomas Koschmy and Costas M. Soukoulis.

GB, GB/T, GBT - Product Catalog. Translated English of Chinese Standard (All national standards GB, GB/T, GBT, GBZ)

2017-2020

with Practical Applications

Study Guide for the INARTE Electromagnetic Compatibility (EMC/EMI) Certification Exam - 2019

Exam RF0-101

This Study Guide for the INARTE EMC Certification Exam for Engineers & Technicians includes 200 printed sample problems with answers and comments, access to an additional 60 video sample problems with complete solutions, and a collection of reference material, including acronyms, standards information, important equations and theory. Sample problems and reference materials are organized by topic to help you quickly find the information you need. The INARTE EMC exam is open-book, and this printed study guide is designed to be used as a reference during the exam.

A practical introduction to techniques for the design of electronic products from the Electromagnetic Compatibility (EMC) perspective Introduces techniques for the design of electronic products from the EMC aspects Covers normalized EMC requirements and design principles to assure product compatibility Describes the main topics for the control of electromagnetic interferences and recommends design improvements to meet international standards requirements (FCC, EU EMC directive, Radio acts, etc.) Well organized in a logical sequence which starts from basic knowledge and continues through the various aspects required for compliance with EMC requirements Includes practical examples and case studies to illustrate design features and troubleshooting Author is the founder of the EMC design risk evaluation approach and this book presents many years' experience in teaching and researching the topic

Covering recent developments, this book aims to give a sound basic knowledge in the field of electromagnetic compatibility (EMC) in relation to electronic circuits, equipment and installations. Illustrated with case studies and examples, this guide includes guides, shortcuts and tips.

This totally revised and expanded reference text provides comprehensive, single-source coverage of the design, problem solving, and specifications of electromagnetic compatibility (EMC) into electrical equipment/systems including new information on basic theories, applications, evaluations, prediction techniques, and practical diagnostic options for preventing EMI through cost-effective solutions. Offers the most recent guidelines, safety limits, and standards for human exposure to electromagnetic fields! Containing updated data on EMI diagnostic verification measurements, as well as over 900 drawings, photographs, tables, and equations-500 more than the previous edition-Electromagnetic Compatibility: Principles and Applications, Second Edition:

Product catalog - China National Standard: GB; GB/T; GBT

Handbook of Aerospace Electromagnetic Compatibility

Principles and Applications, Second Edition, Revised and Expanded

Pulsed EM Field Computation in Planar Circuits

Engineering Electromagnetic Compatibility

The book reviews developments in the following fields: electromagnetic compatibility; EMC standards; EMC testing; radiated emission testing; measurement equipment; electromagnetic transient testing; and uncertainty analysis

Unlike other publications, this new book offers a different approach to the study of electromagnetic compatibility (EMC). It emphasizes the understanding of relevant electromagnetic interactions in increasingly complex systems. Mathematical tools are introduced when pursuing the physical picture unaided becomes counterproductive. In order to handle complexity, numerical tools are developed and the basis and capabilities of these tools are presented. Part I of the book covers underlying concepts and techniques. This includes discussions on electromagnetic fields, electrical circuit components, and electrical signals and circuits. The second part deals with general EMC concepts and techniques and will be useful for predicting the EMC behavior of systems. More practical techniques used to control electromagnetic interference and the design of EMC into products are presented in Part III. The main EMC standards and test techniques are described in the final part of the book. Chapters are designed to allow readers to study the entire book at a pace which reflects their own background and interests. The book appeals to both EMC applications-oriented and analysis-oriented readers. This text provides useful source material for a serious study of EMC, including references to more advanced work.

Applied Electromagnetics and Electromagnetic Compatibility deals with Radio Frequency Interference (RFI), which is the reception of undesired radio signals originating from digital electronics and electronic equipment. With today's rapid development of radio communication, these undesired signals as well as signals due to natural phenomena such as lightning, sparking, and others are becoming increasingly important in the general area of Electro Magnetic Compatibility (EMC). EMC can be defined as the capability of some electronic equipment or system to be operated at desired levels of performance in a given electromagnetic environment without generating EM emissions unacceptable to other systems operating in the vicinity.

This introductory text provides coverage of both static and dynamic fields. There are references to computer visualisation (Mathcad) and computation throughout the text, and there are Mathcad electronic books available free on the Internet to help students visualise electromagnetic fields. Important equations are highlighted in the text, and there are examples and problems throughout, with answers to the problems at the back of the book.

EMC Question of the Week

Automotive Electromagnetic Compatibility (EMC)

CompTIA RFID+ Study Guide

Introduction to Electromagnetic Fields

Design and Implementation

There is currently no single book that covers the mathematics, circuits, and electromagnetics backgrounds needed for the study of electromagnetic compatibility (EMC). This book aims to redress the balance by focusing on EMC and providing the background in all three disciplines. This background is necessary for many EMC practitioners who have been out of study for some time and who are attempting to follow and confidently utilize more advanced EMC texts. The book is split into three parts: Part 1 is the refresher course in the underlying mathematics; Part 2 is the foundational chapters in electrical circuit theory; Part 3 is the heart of the book: electric and magnetic fields, waves, transmission lines and antennas. Each part of the book provides an independent area of study, yet each is the logical step to the next area, providing a comprehensive course through each topic. Practical EMC applications at the end of each chapter illustrate the applicability of the chapter topics. The Appendix reviews the fundamentals of EMC testing and measurements.

In the aerospace industry, avoiding operating issues, especially in regard to space missions and satellite structures, is crucial. The vast majority of these issues can be traced to disturbances in the electromagnetic fields used. Electromagnetic Compatibility for Space Systems Design is a critical scholarly resource that examines the applications of electromagnetic compatibility and electromagnetic interference in the space industry. Featuring coverage on a wide range of topics, such as magnetometers, electromagnetic environmental effects, and electromagnetic shielding, this book is geared toward managers, engineers, and researchers seeking current research on the applications of electromagnetic technologies in the aerospace field.

Study Guide for the INARTE Electromagnetic Compatibility (EMC/EMI) Certification Exam - 2020

Explains and resolves the electromagnetic compatibility challenges faced by engineers in transportation and communications Including Light Rail Transit, shadow effects, and radio dead spots, through the analysis of real-world case studies in the United States and Europe. The author provides Cartesian, cylindrical, and spherical solutions that can be applied to Maxwell's and Wave Equations. The book covers topics such as SCADA systems, shielding, and complexities of radio frequencies and their effect on communication houses. The author also provides information for alternative industries to apply the solutions from the case studies and background content to their own professions. Presents a series of over twenty real-world case studies related to EMC in transportation and communications Covers power line radiation, shadow effects on subway cars, train control systems, and edge distortions Includes the OATS testing method and Department of Transportation (DOT) test Provides access to a companion website housing power point slides and additional appendices Electromagnetic Compatibility: Analysis and Case Studies in Transportation is a reference for practicing engineers involved in transportation and communications, as well as post-graduate engineering students studying transportation and communications in engineering. Donald G. Baker has been a professional electrical/electronic engineer for over 60 years, including ten years as an adjunct professor. He has contributed to the research and development for delta modulators, audio generators, ultrasonic crack detectors, and conductivity meters. In the last three decades, Professor Baker has been a system engineer for transportation, audio, radio, and SCADA, as well as EMC radio intermodulation and rooftop antenna interference.

Study Guide for the INARTE Electromagnetic Compatibility (EMC/EMI) Certification Exam - 2020

Key EMC Facts, Equations and Data

Scientific and Technical Aerospace Reports

Planning Guide for the Review of Telecommunications Systems for Frequency Availability and Electromagnetic Compatibility

A Handbook for EMC Testing and Measurement

Scientists largely attribute the recent deterioration of the electromagnetic environment to power electronics. This realization has spurred the study of methodical approaches to electromagnetic compatibility designs as explored in this text. The book addresses major challenges, such as handling numerous parameters vital to predicting electro magnetic effects and achieving compliance with line-harmonics norms, while proposing potential solutions.

This handy pocket reference offers a concise, constant-use guide to addressing the most common reasons for compliance failure. For working engineers or technicians, it's an essential guide to thwarting electromagnetic interference.

Here's the book you need to prepare for the challenging CISSP exam from (ISC)-2. This revised edition was developed to meet the exacting requirements of today's security certification candidates. In addition to the consistent and accessible instructional approach that earned Sybex the "Best Study Guide" designation in the 2003 CertCities Readers Choice Awards, this book provides: Clear and concise information on critical security technologies and topics Practical examples and insights drawn from real-world experience Leading-edge exam preparation software, including a testing engine and electronic flashcards for your Palm You'll find authoritative coverage of key exam topics including: Access Control Systems & Methodology Applications & Systems Development Business Continuity Planning Cryptography Law, Investigation & Ethics Operations Security Physical Security Architecture & Models Security Management Practices Telecommunications, Network & Internet Security Note:CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

Shelving Guide: Electrical Engineering Revised, updated, and expanded, Electromagnetic Compatibility: Methods, Analysis, Circuits, and Measurement, Third Edition provides comprehensive practical coverage of the design, problem solving, and testing of electromagnetic compatibility (EMC) in electrical and electronic equipment and systems. This new edition provides novel information on theory, applications, evaluations, electromagnetic computational programs, and prediction techniques available. With sixty-nine schematics providing examples for circuit level electromagnetic interference (EMI) hardening and cost effective EMI problem solving, this book also includes 1130 illustrations and tables. Including extensive data on components and their correct implementation, the myths, misapplication, misconceptions, and fallacies that are common when discussing EMC/EMI will also be addressed and corrected.

Metamaterials and Wave Control

Electromagnetic Compatibility (EMC) Design and Test Case Analysis

Electromagnetic Compatibility Management Guide for Platforms, Systems and Equipment

Electromagnetic Compatibility Engineering

This comprehensive study guide thoroughly covers the CompTIA RFID+ exam, the only certification offered for radio frequency identification (RFID), the technology that is rapidly gaining popularity and is expected to completely replace bar codes. Your study will focus on interrogation zone basics, testing and troubleshooting, standards and regulations, tag knowledge, design selection, installation, site analysis, RF physics, and RFID peripherals. The accompanying CD-ROM provides two bonus exams, a detailed glossary of terms, and a searchable PDF of the book.

? The pulsed EM characterization of planar circuits is of high practical importance in many areas of science and engineering such as electromagnetic compatibility and antenna design. This book is hence devoted to the mathematical formulation and numerical analysis of arbitrarily-shaped parallel-plane structures concerning their pulsed EM propagation, radiation and scattering behavior. The key emphasis is on the time-domain reciprocity-based integral-equation formulations and their efficient numerical solution.

A landmark text thoroughly updated, including a new CD As digital devices continue to be produced at increasingly lower costs and with higher speeds, the need for effective electromagnetic compatibility (EMC) design practices has become more critical than ever to avoid unnecessary costs in bringing products into compliance with governmental regulations. The Second Edition of this landmark text has been thoroughly updated and revised to reflect these major developments that affect both academia and the electronics industry. Readers familiar with the First Edition will find much new material, including: • Latest U.S. and international regulatory requirements • PSpice used throughout the textbook to simulate EMC analysis solutions • Methods of designing for Signal Integrity • Fortran programs for the simulation of Crosstalk supplied on a CD • OrCAD(r) PSpice(r) Release 10.0 and Version 8 Demo Edition software supplied on a CD • The final chapter on System Design for EMC completely rewritten • The chapter on Crosstalk rewritten to simplify the mathematics Detailed, worked-out examples are now included throughout the text. In addition, review exercises are now included following the discussion of each important topic to help readers assess their grasp of the material. Several appendices are new to this edition including Phasor Analysis of Electric Circuits, The Electromagnetic Field Equations and Waves, Computer Codes for Calculating the Per-Unit-Length Parameters and Crosstalk of Multiconductor Transmission Lines, and a SPICE (PSPICE) tutorial. Now thoroughly updated, the Second Edition of Introduction to Electromagnetic Compatibility remains the textbook of choice for university/college EMC courses as well as a reference for EMC design engineers. An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

Electrical Engineering Engineering Electromagnetic Compatibility Principles, Measurements, Technologies, and Computer Models Second Edition This practical, enhanced second edition will teach you to avoid costly post-design electromagnetic compatibility (EMC) fixes. Once again, V. Prasad Kodali provides a comprehensive introduction to EMC and presents current technical information on sources of electromagnetic interference (EMI), EMC/EMI measurements, technologies to control EMI, computer simulation and design, and international EMC standards. Features added to this second edition include: • Two new chapters covering EMC computer modeling and simulation and signal integrity • Expanded assignments at the close of each chapter • Illustrative examples that enhance comprehension • Updated information in Selected Bibliography and EMC Standards chapters • A new appendix that lists websites relevant to EMC/EMI Engineering Electromagnetic Compatibility, Second Edition is presented in a concise, user-friendly format that combines a rigorous solutions-based, mathematical treatment of the underlying theories of EMC with the most recent practical applications. It is ideally suited as a desk reference for practicing engineers and as a textbook for students who need to understand the form and function of EMC and its relevance to a variety of systems.

Handbook

Foundations of Electromagnetic Compatibility

Grounds for Grounding

Methods, Analysis, Circuits, and Measurement, Third Edition

Analysis and Case Studies in Transportation