

}essentials{

Dimitrij Tschodu

How to Study Physics Effectively and Sustainably

Tips and Tricks for First-Year Students

 Springer

essentials

Springer essentials

Springer essentials provide up-to-date knowledge in a concentrated form. They aim to deliver the essence of what counts as “state-of-the-art” in the current academic discussion or in practice. With their quick, uncomplicated and comprehensible information, essentials provide:

- an introduction to a current issue within your field of expertise
- an introduction to a new topic of interest
- an insight, in order to be able to join in the discussion on a particular topic

Available in electronic and printed format, the books present expert knowledge from Springer specialist authors in a compact form. They are particularly suitable for use as eBooks on tablet PCs, eBook readers and smartphones. *Springer essentials* form modules of knowledge from the areas economics, social sciences and humanities, technology and natural sciences, as well as from medicine, psychology and health professions, written by renowned Springer-authors across many disciplines.

More information about this subseries at <https://link.springer.com/book-series/16761>

Dimitrij Tschodu

How to Study Physics Effectively and Sustainably

Tips and Tricks for First-Year Students

Dimitrij Tschodu
Leipzig, Germany

ISSN 2197-6708

essentials

ISSN 2731-3107

Springer essentials

ISBN 978-3-658-32812-2

ISSN 2197-6716 (electronic)

ISSN 2731-3115 (electronic)

ISBN 978-3-658-32813-9 (eBook)

<https://doi.org/10.1007/978-3-658-32813-9>

This book is a translation of the original German edition “Wie man effektiv und nachhaltig Physik studiert” by Dimitrij Tschodu published by Springer Fachmedien Wiesbaden GmbH, part of Springer Nature in 2018. The translation was done with the help of artificial intelligence (machine translation by the service DeepL.com). A subsequent human revision was done primarily in terms of content, so that the book will read stylistically differently from a conventional translation. Springer Nature works continuously to further the development of tools for the production of books and on the related technologies to support the authors.

© Springer Fachmedien Wiesbaden GmbH, part of Springer Nature 2022

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Responsible Editor: Margit Maly

This Springer imprint is published by the registered company Springer Fachmedien Wiesbaden GmbH part of Springer Nature.

The registered company address is: Abraham-Lincoln-Str. 46, 65189 Wiesbaden, Germany

What You Can Find in This *essential*

- A detailed and carefully worked out experiment protocol of the biggest experiment in the study of physics: the study itself
- An honest description of how to study physics without nervous overload
- An opinion—carefully placed between the lines—that diligence trumps a talent for physics or mathematics

Acknowledgment

For the opportunity to write this *essential*, I thank the publisher Springer Spektrum.

I would like to thank Margit Maly, who has supervised the editing with great skill and sensitivity.

I would like to thank Ana-Maria Mihalca, who has worked incredibly hard for this *essential*.

Without my wife, Anastasia Wolschewski, the key of this *essential* would be neither cheerful nor bright, but rather dull and gloomy.

Contents

1	Three Hours of Reading Instead of Five years of Stress	1
2	How to Avoid Mistakes in the Beginning	3
2.1	Willing to be Intelligent	4
2.2	Willing to be Perfect	4
2.3	Wasting Time on Trivial Problems	5
2.4	Competing with Fellow Students	5
2.5	Isolate Yourself from Others	6
2.6	Read More than Necessary	6
2.7	Being too Reserved	6
2.8	Not Leaving Time for Experimentation	7
3	How not to Waste Your Time	9
3.1	Time Spent in Physics Degree.	10
3.2	Self-Study	10
3.3	Television, Social Media and Magazines	12
3.4	Group Work.	12
4	How to Make Your Studies Easier.	15
4.1	Surround Yourself with Fellow Students Who are Better Than You.	16
4.2	Research Like an Investigative Journalist.	16
4.3	Use Swarm Intelligence	17
5	How You Concentrate Intensely	19
5.1	Time	20
5.2	Location.	21
5.3	Routine	21
5.4	Practical Elements of the Routine.	22