

SURVIVAL STATICS

PART 1



SURVIVAL STATICS



TEAM MEKANIKA AND ARIFF AV

Penerbit
Universiti Malaysia Pahang
2021



اونيورسيتي مليسيا قهغ
UNIVERSITI MALAYSIA PAHANG
PENERBIT

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First Published, September 2021

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Perpustakaan Negara Malaysia Cataloguing-in-Publication Data

SURVIVAL STATICS. PART 1 / TEAM MEKANIKA AND ARIFF AV.

(UMP COMIC SERIES)

ISBN 978-967-2831-14-3

1. Statics--Comic books, strips, etc.

2. Comic books, strips, etc.

3. Government publications--Malaysia.

I. Team Mekanika and Ariff AV.

II. Series.

741.5

Director Penerbit : M. Azli
Editor : A. R. Aria
Proofreader : A. R. Aria & D. Aziz
Graphic Designer : Ikram
Administration : A. Azianti & F. W. Riann
Sales & Marketing : N. H.

Published By

Penerbit

Universiti Malayasia Pahang
Lebuhraya Tun Razak, 26300 Gambang,
Kuantan, Pahang Darul Makmur.
Tel: 09-549 3273 Fax: 09-549 3281

Printing

M PRINT SOLUTION (001872721-U)

No. 38-1, Jalan PBS 14/8, Taman Perindustrian Bukit Serdang,
4330 Seri Kembangan, Selangor Darul Ehsan.
Tel : 03-8959 6132/016-2126132 Email : mprint09@gmail.com

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Online Shop: <https://msha.ke/penerbitump>
Official Page (FB) : Penerbit Universiti Malaysia Pahang
Official IG : Penerbitump

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Dedicated to the young engineering students of Malaysia.

*May we seek knowledge for the betterment of ourselves,
to appreciate the beauty of engineering, and to give back
to the ummah (community) in the future. Be the change
you want to see in the world!*



Brief Biodata of Contributors

TEAM MEKANIKA

Dr. Luqman Hakim Ahmad Shah (Project Leader)

Dr. Luqman is a lecturer in Faculty of Mechanical and Automotive Engineering Technology (FTKMA), UMP since 2010. His passion to enhance the student's learning experience led him to secure the Teaching & Learning (T&L) grant (RDU150384) in order to produce this comic.

Dr. Azri Alias

Dr. Azri is an expert in mechanical system engineering and has been teaching mechanical and automotive engineering related subjects in FTKMA since 2013. In 2015, he replaced Dr Luqman as the project leader as the latter was on study leave.

Mr Lee Giok Chui

The recipient of UMP's Teaching Excellence Award 2015, Mr Lee has a long history of teaching mechanical engineering related subjects. His expertise is well known and his teaching methods are well liked by students. He has shared his expertise in the making of this comic.

Dr. Mohd Hazwan Yusof

Dr. Hazwan has been teaching Statics since 2015. As such, he has vast experience with engaging mechanical engineering students while also teaching them through interactive videos. Some of the videos are included in this comic for further comprehension of the subject.

Dr. Daing Nafiz Daing Idris

Dr. Daing specializes in automotive engineering and has been teaching mechanics related subjects since 2014. He has provided his expertise on the subject to produce this comic.

Dr. Nasrul Hadi Johari

Dr. Nasrul has been teaching mechanics related subjects since 2009. As an alumnus himself, he has gauged well with the engineering students and have provided expert insights in this comic.

Mr. Azim Arshad

Mr. Azim is a lecturer in FTKMA since 2011 and has been teaching mechanical engineering courses. His support and passion for this project in the initial stages has helped in securing the T&L grant to kickstart this project.

STORYLINE AND ILLUSTRATION TEAM

Mr. Nazry Salam

Mr. Nazry leads the storyline and illustration team of this project. He has vast experience in the local comic industry through his well-known Misi comic series.

Mr. Ariff AV

Mr. Ariff is the main illustrator for this comic. He is an experienced artist with superb talent and passion. His high-quality work can be observed throughout this comic.

Ms. Maryam

Ms. Maryam specializes in creating storylines and thumbnails for comics. Through her prior experience in the science and engineering field, she spearheaded the engaging storyline and tests in this comic book.

Mr. Afiq Salam

Together with Nazry Salam, the brothers are the original Tim Misi. He has illustrated several comic books under the Misi comic book series as well other titles. He illustrated the front cover of this comic.

Forward

Alhamdulillah, I am very much delighted with the creation and publication of this comic-based Statics supplementary book by *Team Mekanika* and SUARA UMP. Statics has been one of the engineering subjects that I have taught for years. As UMP celebrates its nineteenth anniversary this year, its members of the academia are also facing a different set of pedagogical challenges, which are unique to current generation of students. While certain aspects in traditional pedagogical approaches remain relevant and irreplaceable by technology, the efficacy of teaching and learning process in this age requires continuous innovation and creativity.

In that regard, I am pleased that this book provides the readers with a unique and interactive experience by presenting an engaging and well-structured story that makes Statics learning more enjoyable with test questions, additional notes and supplementary links to Statics-related videos. Not only that it facilitates student's understanding, this book is also a must-have teaching material for instructors of this subject, which complements other related teaching resources and tools.

I highly recommend this book and commend the members of *Team Mekanika* namely Dr. Luqman Hakim Ahmad Shah, Dr. Azri Alias, Mr. Lee Giok Chui, Dr. Mohd Hazwan Yusof, Dr. Daing Nafiz Daing Idris, Dr. Nasrul Hadi Johari and Mr. Azim Arshad for this innovative creation. To Mr. Nazry Salam, Mr. Ariff AV, Ms. Maryam and Mr. Afiq Salam and the rest of the publication team, kudos for the creative storyline and illustration presented herein.

Professor Ir. Dr. Wan Azhar Bin Wan Yusoff
Former Vice Chancellor, Universiti Malaysia
Pahang



Preface

This comic is the direct outcome of my own experience studying abroad in Japan in 2004. The first semester was very tough for me, because all the lectures were 100% in Japanese. Luckily, engineering used a lot of numbers and equations, so that helped a lot! In addition, during the first semester, a Japanese friend introduced me to a physics supplementary reference book that was very engaging, with a lot of drawing and easy explanations. It was the first time I genuinely **enjoyed** reading a university-level book! I suddenly became aware of much more similar books in local book stores, where the explanations are simple, engaging and easily understood by utilizing graphics, caricatures, analogies and simple words. This includes a series of books entitled ‘The Manga Introduction to...’, where the book is entirely in comic form but explaining tertiary subjects such as Fourier Analysis and Statistics! Having collected a handful of such supplementary books myself, I benefited a lot from reading these books in order to understand and appreciate more the subjects thought in class. I am not ashamed to say that, comics has helped me during my studies, even when I did my PhD!

Coming back and teaching in Malaysia, I could sense the students’ struggle with understanding the text books which are usually very thick and in English, i.e., a foreign language. Without interest, the students could easily get bored and have no driving factor to excel in the particular subject. It is due to this that I decided to form a team to create a ‘home-grown’ comic book that tackles a core subject in the engineering field to create interest and motivation.

To the engineering/engineering technology students (and the common readers in general), please note that, as a supplementary book, such comic *cannot* replace text books. These comics’ sole purpose is to create interest and motivation for students to engage in the specific subjects. It is *not possible* to include the vast scope of a given subject in a storyline, let alone with extensive examples. Therefore, our only hope is that it will spark interest towards the subject and eliminate the ‘this subject is hard’ mentality around a particular subject. By changing the mindset, you will start to appreciate the subject and thrive to understand more.

To the lecturers and academicians, you will see in the storyline that there are several engineering considerations which are omitted in the comic. For instance, for the first test that the boys faced, the dynamic movement of the rope while Mohan is climbing, or the oscillation of the wooden board in the

second test when the boys jumped on it are both neglected. We are aware of this, but let it remain as is, since Statics is usually an early core subject and we do not want to complicate the equations and explanation. Hopefully due time, the students will learn more about such things in future subjects and will consider them then.

Please also note that this is also an ongoing project, where we hope to produce more books like this. If you believe in such approach, we *welcome* you to join this project in the future, so that a larger set of tertiary-level comic books in various fields can be available in the future! Our expertise is limited; therefore, we seek your help in synergizing and expanding this collection! For inquiries, please contact Mr Azli Syukri at mdazli@ump.edu.my.

Sincerely,
Luqman Hakim Bin Ahmad Shah, PhD
Lecturer,
Faculty of Mechanical and Automotive Engineering Technology,
Universiti Malaysia Pahang.

Acknowledgement

First and foremost, I praise Almighty God for this opportunity and experience of producing, to the best of our knowledge, the **first ever, locally-made, comic-based** supplementary book, specifically designed for engineering/engineering technology students! Only through His Grace alone would this project be a success.

Secondly, I would like to render my utmost gratitude towards all the individuals that has made this project a success. It could not have been possible without the enormous efforts by Team Mekanika (Dr Azri Alias, Mr Lee Giok Chui, Dr Mohd Hazwan Yusof, Dr Daing Nafiz Daing Idris, Dr Nasrul Hadi Johari and Mr Azim Arshad) as well as from the storyline and illustration team members, namely Mr Nazry Salam, Mr Ariff AV, Ms Maryam, Mr Afiq Salam and Mr Hazwan Zai Ibrahim. Last but not least, my sincere appreciation towards UMP for the Teaching and Learning grant (RDU150384) as well as Mr Azli Shukri, Mrs Athirah Ruzaini, Mr Azman Md Diah and the whole SUARA UMP staffs for funding, proofreading and publishing efforts. Your constant support is second to none!



Chapter 1

THE INVITATION

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