

PROTOTYPE DESIGN COLLECTION

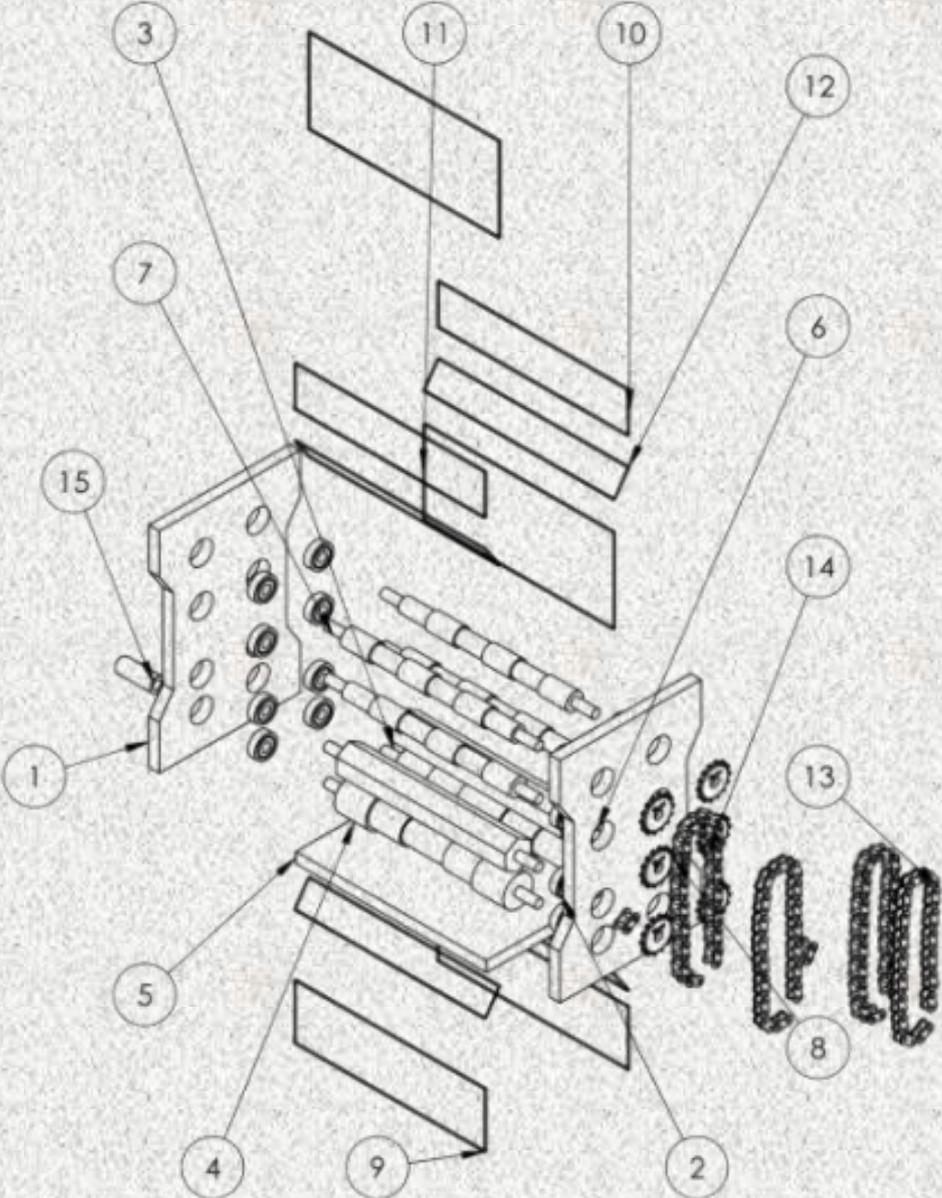
SERIES 4



Universiti Teknologi MARA
Pasir Gudang Campus

Prototype Design Collection

Series 4



Ahmad Najmie Rusli

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PUBLISHER:

Universiti Teknologi MARA
Cawangan Johor Kampus Pasir Gudang,
Jalan Purnama, Bandar Seri Alam, 81750 Masai, Johor
September 2025

eISBN: 978-967-0033-62-4

FOREWORD

This digital book on Prototype Design Collection Series 4 (PDC Series 4) is published as a reference design for mechanical engineering students. The designs presented experience a few phases of analysis before fabrication of prototype. Each project summarises the project description, prototype, figures, and design parameter. The design products vary in tools or equipment for household, workshop, entrepreneur, etc. Suggested material and detail of prototype dimension are also mentioned in this book.

It is hoped that this book will assist the students to have more ideas on innovation design products in the future.

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CHAPTER 31

Design, Analysis and Assembly of a 4-Axis Left Robotic Arms for STEM Educational Aids

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PROJECT DESCRIPTION

This initiative seeks to tackle the difficulties encountered by Malaysian students in comprehending Science, Technology, Engineering, and Mathematics (STEM) subjects, with a specific focus on engineering. The typical curriculum's emphasis on theoretical knowledge leaves many students insufficiently equipped for the actual application of these principles. Current trends, including heightened absenteeism at pivotal evaluations such as the SPM, indicate a deterioration in academic involvement, particularly in theoretical disciplines. The project implements a 4-axis left robotic arm as an educational tool to connect STEM theory with practical application. The robotic arm prototype was developed with SolidWorks, amalgamating mechanical engineering ideas with programming notions. It was meticulously designed, produced, and assembled to guarantee both operational efficacy and pedagogical worth. This initiative offers an interactive and engaging method for students to cultivate vital STEM abilities, so enriching their educational experience and equipping them for future challenges in automation and engineering.

Keywords: *STEM, 4-axis left robotic arms*

PROTOTYPE



DESIGN PARAMETER

