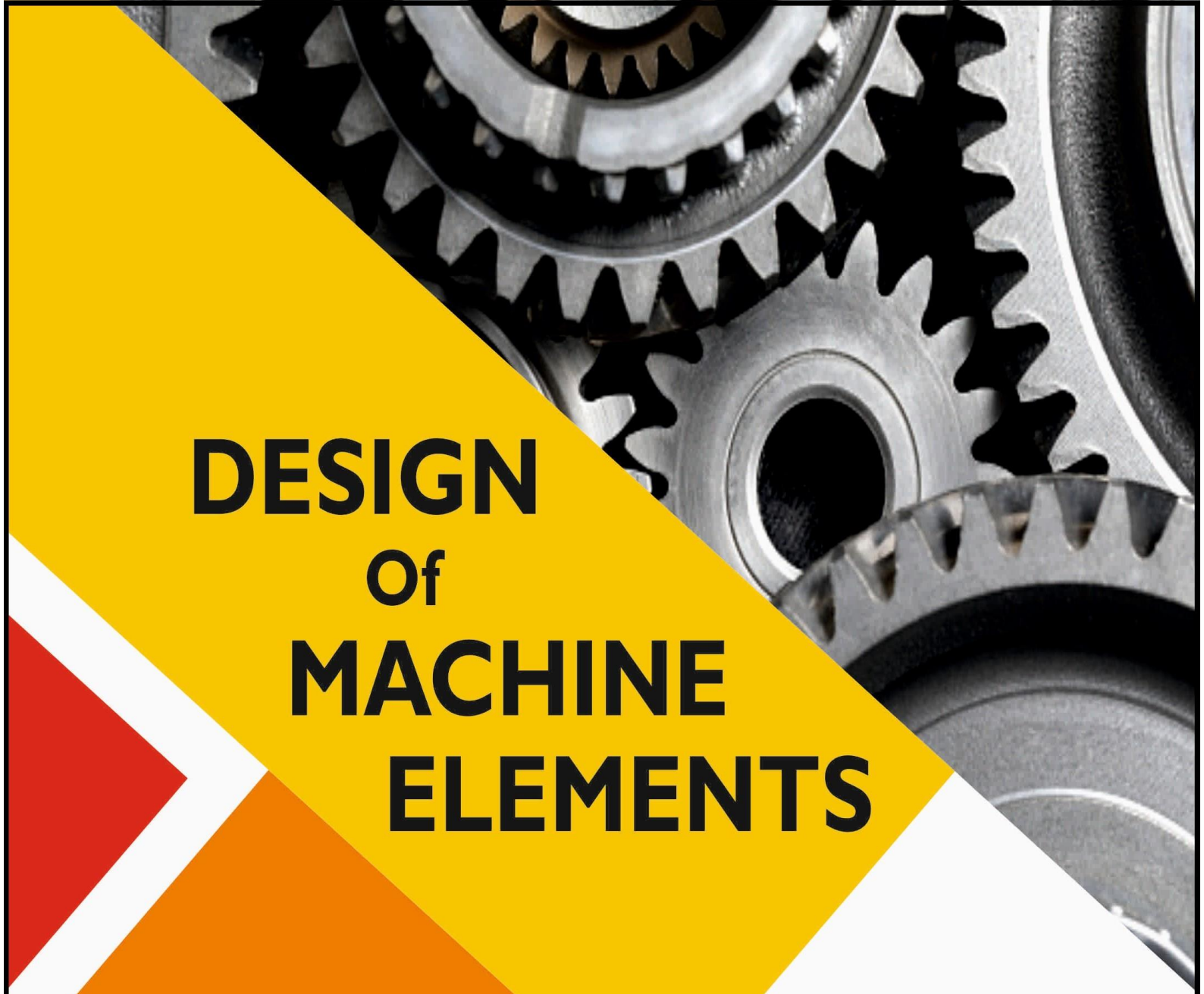

DESIGN Of MACHINE ELEMENTS

Dr. Sanjeev Reddy K. Hudgikar
Dr. Vishwanath Patil
Dr. Prashant G. Kamble

Kripa Drishti Publications, Pune.

DESIGN OF
MACHINE ELEMENTS

Dr. Sanjeev Reddy K. Hudgikar
Professor,
Mechanical Engineering Department,
Sharanabasva University,
Kalaburagi, Karnataka, India.

Dr. Vishwanath Patil
Associate Professor,
Mechanical Engineering Department,
Sharnbasva University,
Kalaburagi Karnataka State, India.

Dr. Prashant G. Kamble
Professor,
Department of Industrial and Production Engineering,
P.D.A. College of Engineering,
Kalaburagi Karnataka State, India.

Kripa-Drishti Publications, Pune.

Book Title: **Design of Machine Elements**

Authored By: **Dr. Sanjeev Reddy K. Hudgikar,**
Dr. Vishwanath Patil, Dr. Prashant G. Kamble

Price: ₹699

1st Edition

ISBN: **978-93-94570-43-6**

Published: **May 2023**

Publisher:

Kripa-Drishti Publications

A/ 503, Poorva Height, SNO 148/1A/1/1A,
Sus Road, Pashan- 411021, Pune, Maharashtra, India.
Mob: +91-8007068686
Email: editor@kdpublications.in
Web: https://www.kdpublications.in

PREFACE

This book ***Design of Machine Elements*** has been written for courses on mechanical design, a compulsory course for students majoring in mechanical engineering. Since safety has become an increasing concern nowadays, the book presents the subject in an up-to-date manner with a strong emphasis on failure analysis and prevention-based machine element design. It aims to provide students with basic concepts, principles and philosophy in analysing, selecting and designing safe, efficient and workable machine elements, and to expose them to the detailed design methods, skills and tools necessary to convert concepts into practical devices.

Each chapter is written in a straightforward and logical manner, explaining the theoretical considerations in machine element design. A large number of solved problems are provided to clarify and expand on the theoretical principles.

This text book has been thoroughly revised with the syllabus of all Indian Technical Universities in mind. Machine Design-I and Machine Design -II The book covers all of the topics covered in both of these courses.

Dedicated

to

Dearest father Sri. Kallappa S Hudgikar.
Dearest Mother Late Smt. Paramma Hudgikar.
&
My wife Dr Sumangala Patil,
My Son Krishi Reddy & Sujan Reddy.
Who are my source of encouragement & inspiration.

Dedicated

to

Dearest father Late Sri. Mallikarjun R Patil.
Dearest Mother Smt. Annapurna M Patil.
&
My wife Smt. Geetlaxmi Patil,
My Son Rudransh Patil
Who are my source of encouragement & inspiration.

Dedicated

To

Dearest father Late Sri. Gurunath R Kamble.
Dearest Mother Smt. Ranjana
&
My wife Akshata,
Doughter Soumya,
Son Aniket.
Who are my source of encouragement & inspiration.

Abbreviations

American Gear Manufacturers Association (AGMA)

American Welding Society (AWS)

Centre Distance (CD)

Circular Pitch (CP)

Diametral Pitch (DP)

Extreme Pressure (EP)

Factor of Safety (FOS)

Japanese Gear Manufacturers Association (JGMA)

Journal Of Engineering Research & Technology (IJERT)

Maximum Transmitted Torque (Tmax)

Module (M)

Quality Control Step (QC)

Safe Factor (SF)

Teeth In Mesh (T.I.M)

Tension (Te)

Work Load Limit (WLL)

INDEX

ABOUT THE AUTHORS

Dr. Sanjeev Reddy K. Hudgikar (B.E., M.Tech., Ph.D., MISTE, FISME)

Currently working as a Professor in Mechanical Engineering Department, Sharanabasva University, Kalaburagi, Karnataka. Former Professor & Principal at Lingaraj Appa Engineering College, Bidar, Karnataka. Former Professor & Principal at PVKK Institute of Technology, Ananthapur, Andra Pradesh. BE (I&PE)First Class with Distinction passed out year 1994, M.Tech (Production Engineering) First Class with Distinction passed out year 2001. Ph D in (Mechanical Engineering) Awarded 2011, from JNT University Ananthapur (AP). 22 No of National & International Journal Research Paper are published. 06 No of Research Paper Patents are published. 10 No of Ph D Research Scholars are Guiding at VTU Belagavi. Co-authored a book titled "Management and Entrepreneurship" First Edition, Published by New Age International (P) Ltd New Delhi, 2012, ISBN:978-81-224-3533-7. Awarded "Best Principal Award 2020",INSc (Institute of Scholars)in Recognition of Valuable Contribution to the Academic Community & the Students INSc Bangalore 2019-2020. Awarded "Innovative Research & Dedicated Best Principal AWARD" Specilization:Mechanical Engineering by The Society of Innovative Educationalist & Scientific Research Professional Chennai,2020-2021. Organised Number Of National Level Work Shops/Conferences: 64 Number of Projects Guided at Under-Graduate Level:43 Number of Projects guided at Post-Graduate level:18 Recognized Sharnbasva University as a Academic Advisory Board Member. Recognized by the Visvesvaraya Technological University, Belagavi for Ph.D. Recognized Guide. Recognized by the JNT University, Ananthapur as a Ratified Principal Recognized by the RNB Global University, Rajasthan as a University Academic Advisory Board Member. Total Teaching & Administration Experience is more than 25 years.

Dr. Vishwanath Patil (B.E.,M.Tech.,Ph.D.,MISTE)

Currently working as a Associate Professor in Mechanical Engineering Department, Sharnbasva University, Kalaburagi. BE (Mech) Completed in the year 2006. M.Tech (Design Engineering) Completed in the year 2010. Ph D in (Mechanical Engineering) Awarded 2019, from Visvesvaraya Technological University Belagavi (KARNATAKA). 12 No of National & International Journal Research Paper are published. 04 No of Patents are published. 06 No of Ph D Research Scholars are Guiding @ Sharnbasva University Kalaburagi. Awarded "Best Young Faculty Award 2022", Global Educational Leadership Award. Organised Number Of National Level Work Shops/Conferences: 04 Number of Projects Guided at Under-Graduate Level:25 Number of Projects guided at post-Graduate level:10 Recognized Sharnbasva University as a BOS And BOE Member. Total Teaching & Administration Experience is more than 12 years.

Dr. Prashant G. Kamble (B.E., M.Tech., Ph.D., FISME, MISTE, FIEI)

Currently working as a Professor in Department of Industrial and Production Engineering P.D.A. College of Engineering, Kalaburagi Karnataka State, India. BE (I&PE), First Class with Distinction passed out year 1994, M.Tech (Production Engineering) First Class with Distinction passed out year 2001. Ph D in (Mechanical Engineering) Awarded 2012, from V.T. University Belagavi, Karnataka State, India. 19 No of National & International Journal Research Paper are published. 02 No of Research Paper Patents are published. 4 No of Ph.D. Research Scholars are Awarded under Supervision. 04 Research Scholar Guiding at VTU Belagavi. Awarded "Innovative Technologist and Dedicated Best Professor Award", The Society of Innovative Educationalist & Scientific Research Professional, Chennai 2021. Organized Number of National Level Faculty Development Program sponsored by AICTE and workshops Recognized Sharnbasva University as a Board of Study Member. Recognized P. D. A. College of Engineering, Kalaburagi as a Board of Study Member. Recognized by the Visvesvaraya Technological University, Belagavi for Ph.D. Recognized Guide. Total Teaching Experience is more than 22 years.

KRIPA DRISHTI PUBLICATIONS

Price: ₹699

Kripa-Drishti Publications
A-503 Poorva Heights, Pashan-Sus Road, Near Sai Chowk,
Pune – 411021, Maharashtra, India.
Mob: +91 8007068686
Email: editor@kdpublications.in
Web: https://www.kdpublications.in

ISBN: 978-93-94570-43-6

9 789394 570436