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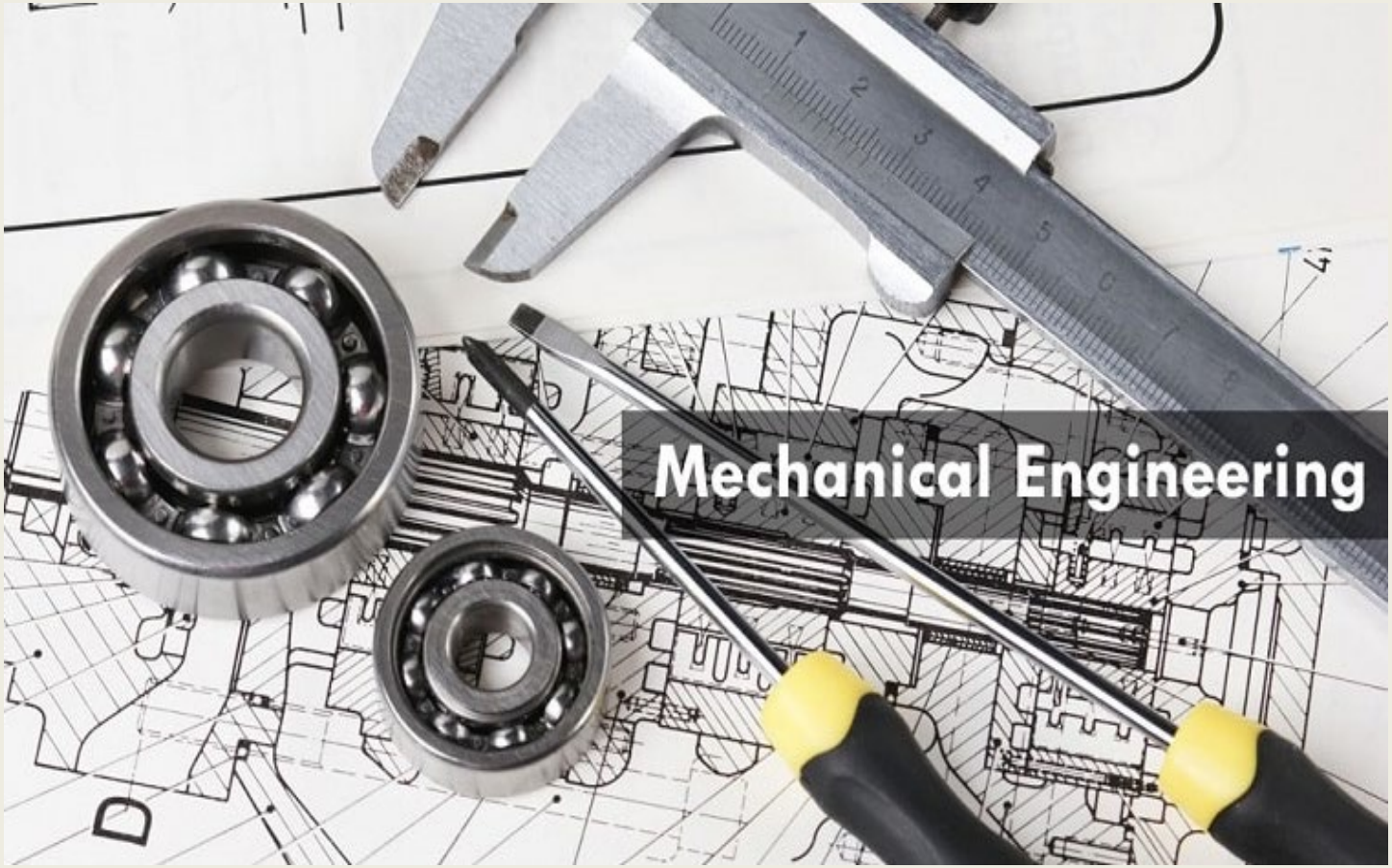


Volume 8

MECH CRUIZ 24

PERI

INSTITUTE OF TECHNOLOGY

OUR COLLEGE

The PERI Educational and Charitable Trust was founded in 2007. The vision of the trust is to provide a world class nodal center of education where academics, communication, comprehension, visualization, practical application and leadership skills are imparted through encouraging research, training and development in technical and non-technical areas.

PERI IT is the brainchild of **Mr. Saravanan Periasamy**, the founding President & CEO of PERI Software Solutions Inc., a leading multinational IT Consulting and Services Company based in USA and the Chairman of the PERI Educational and Charitable Trust. He is the source of inspiration and the pathfinder for this institution.

OUR DEPARTMENT

Mechanical Engineering is one of the largest, broadest and oldest engineering disciplines. It finds its application in every branch of industry including aerospace, manufacturing, automotive, building systems, energy, chemical and high-technology sectors. Because of the breadth of the field, there is always a steady demand for mechanical engineers who create the processes and systems that drive technology and industry.

PATENT PUBLICATIONS

1. **Dr.S.Mohamed Abbas**, Professor, Mechanical Engineering filed a patent titled "A cloud based model for diabetes monitoring and health medical service integration".
2. **Dr.S.Mohamed Abbas,** Professor, Mechanical Engineering filed a patent titled "A novel densenet based Deep Neural netwok for Enhanced tuberculosis detection using Chest X-ray IMA".
3. **Dr Mohamed Abbas,** Professor, Mechanical Engineering and Mr.S.Athirayan, Assistant Professor, Computer Science and Engineering published a patent titled "Automatic Glucose Level Identification And Alert System For Preventing Blood Clots In Patients".
4. **Dr.S.Mohamed Abbas,** Professor, Mechanical Engineering published a patent titled "Development Of Smart Headlight Intensity Manager For Automotive Vehicles To Prevent Accidents**".**
5. **Dr.T.N.Balaji,** HOD**, Dr.J.Subashini,** Associate Professor, **Dr.S Mohamed Abbas,** CII Head, **& Ms.T.Thanga Subha**, Assistant Professor, Science and Humanities published a patent titled "Preparation and use of chitosan oligosaccharide-based hybrid materials For removal of heavy metal (Pb) from wastewater".

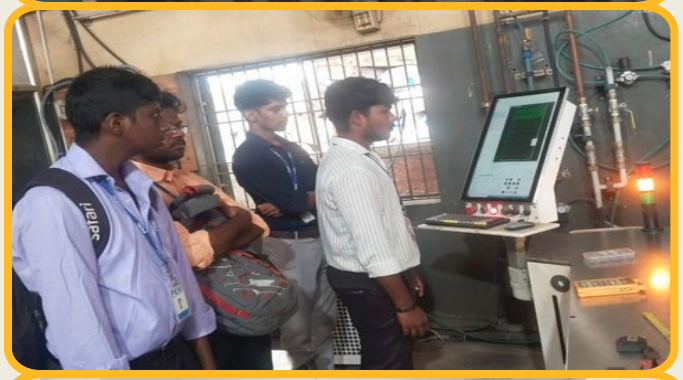
RESEARCH AND DEVELOPMENT

Outstanding achievements of our dedicated researchers at PERIIT for the Academic year 2023-24

AUG 31

INDUSTRIAL VISIT

HYEONGSHIN AUTOMOTIVE INDUSTRIES & BALAVINAYAGA INDUSTRIES, CHENNAI



SEP 03

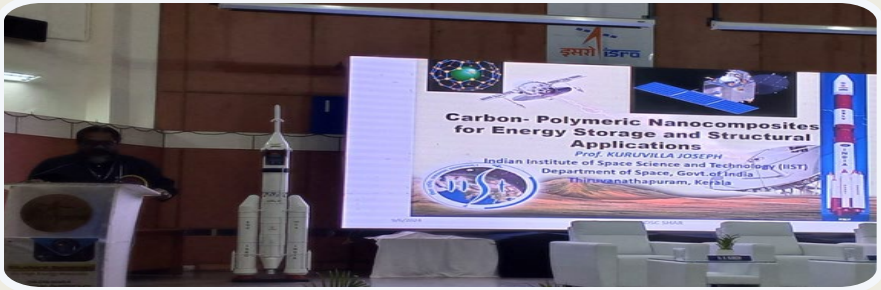
GUEST LECTURE

MEP SYSTEM COORDINATION AND COLLABORATION

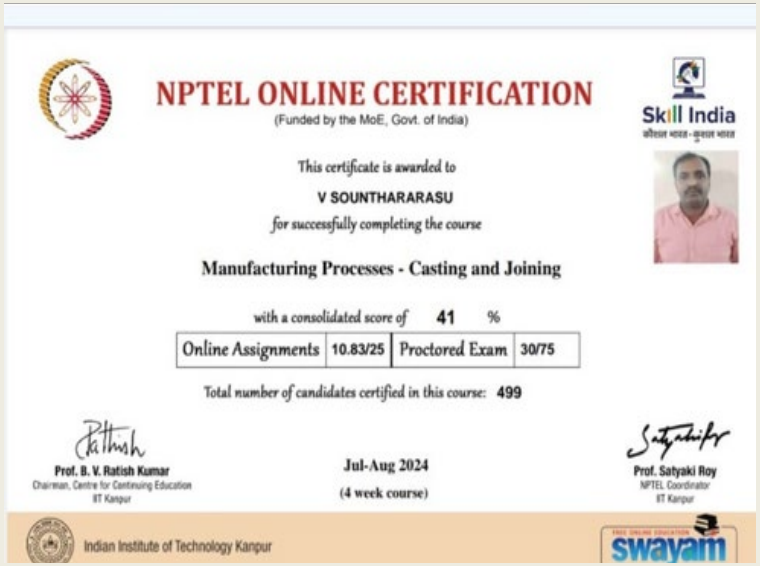
SEP 06

SEMINAR & INDUSTRIAL VISIT

ISRO- SATISH DHAWAN SPACE CENTRE
SHAR, SRIHARIKOTA



FACULTY ACHIEVERS



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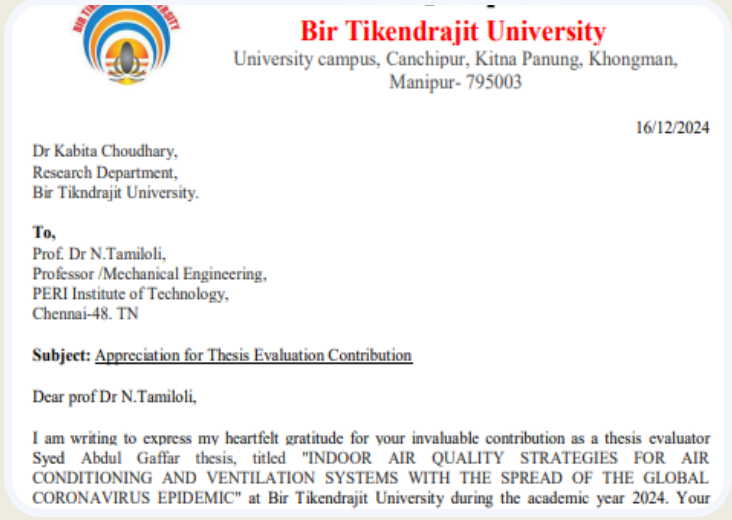

Bir Tikendrajit University

University campus, Canchipur, Kitna Panung, Khongman, Manipur- 795003

16/12/2024

Dr Kabita Choudhary,
Research Department,
Bir Tikndrajit University.

To,
Prof. Dr N.Tamiloli,
Professor /Mechanical Engineering,
PERI Institute of Technology,
Chennai-48. TN

Subject: Appreciation for Thesis Evaluation Contribution

Dear prof Dr N.Tamiloli,

I am writing to express my heartfelt gratitude for your invaluable contribution as a thesis evaluator Syed Abdul Gaffar thesis, titled "INDOOR AIR QUALITY STRATEGIES FOR AIR CONDITIONING AND VENTILATION SYSTEMS WITH THE SPREAD OF THE GLOBAL CORONAVIRUS EPIDEMIC" at Bir Tikendrajit University during the academic year 2024. Your

FACULTY ACHIEVERS

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Madras Christian College
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NATIONAL SERVICE SCHEME

CERTIFICATE OF APPRECIATION

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R.JAYAKANTHAN

has secured THIRD place in LIGHTMUSIC, an Inter-Collegiate competition held on 24.09.24 & 25.09.24 as part of **SERVITIUM'24**

Dr.D.Merlin Juliet Arulthangam
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Mr./Ms. JAYAKANTHAN.R has secured (~~Winner~~ / Runner) in the Non-Technical Event (**Bio-modelling, Bio-connection, Debate, Bio-brains, Dance, Music, Singing (GROUP), Talespire, Doodle designing, Adzap, Sketching, Treasure hunt, Find the BGM, Guess the lyrics, Chess, Photography, Reels making, Mobile gaming, Business Marketing**) of 1st National Level Conference and Technical Symposium,**"BIOCIENCIA 2024"**, Organized by the Department of Medical Biotechnology and Integrative Physiology, SIMATS Engineering, Saveetha Institute Of Medical and Technical Sciences, Thandalam, Chennai- 602105 on 17-18th October, 2024.

POORVIKA

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Dr. S. Moogambigai
Co-Convener

Dr. B. Ramesh
Principal

OCT 08

INDUSTRIAL VISIT

TAMILNADU CENTRE OF EXCELLENCE FOR ADVANCED MANUFACTURING (TANCAM)

OCT 22 NEW PRODUCT DEVELOPMENT CLUB

OCT 25

WIND ENERGY EXHIBITION

CHENNAI TRADE CENTRE - NANDAMBAKKAM

OCT 28

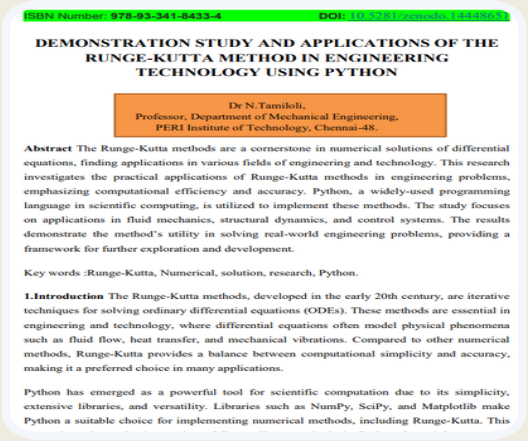
MEMORANDUM OF UNDERSTANDING (MOU)

PRECISURE TESTING & CALIBRATION PVT LTD

OCT 29

ADVANCED ACOUSTIC TECHNOLOGIES IN AUTOMOBILE

BOOK PUBLICATIONS



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DEMONSTRATION STUDY AND APPLICATIONS OF THE RUNGE-KUTTA METHOD IN ENGINEERING TECHNOLOGY USING PYTHON

Dr N.Tamiloli,
Professor, Department of Mechanical Engineering,
PERI Institute of Technology, Chennai-48.

Abstract The Runge-Kutta methods are a cornerstone in numerical solutions of differential equations, finding applications in various fields of engineering and technology. This research investigates the practical applications of Runge-Kutta methods in engineering problems, emphasizing computational efficiency and accuracy. Python, a widely-used programming language in scientific computing, is utilized to implement these methods. The study focuses on applications in fluid mechanics, structural dynamics, and control systems. The results demonstrate the method's utility in solving real-world engineering problems, providing a framework for further exploration and development.

Key words :Runge-Kutta, Numerical, solution, research, Python.

1.Introduction The Runge-Kutta methods, developed in the early 20th century, are iterative techniques for solving ordinary differential equations (ODEs). These methods are essential in engineering and technology, where differential equations often model physical phenomena such as fluid flow, heat transfer, and mechanical vibrations. Compared to other numerical methods, Runge-Kutta provides a balance between computational simplicity and accuracy, making it a preferred choice in many applications.

Python has emerged as a powerful tool for scientific computation due to its simplicity, extensive libraries, and versatility. Libraries such as NumPy, SciPy, and Matplotlib make Python a suitable choice for implementing numerical methods, including Runge-Kutta. This

PERI INSTITUTE OF TECHNOLOGY
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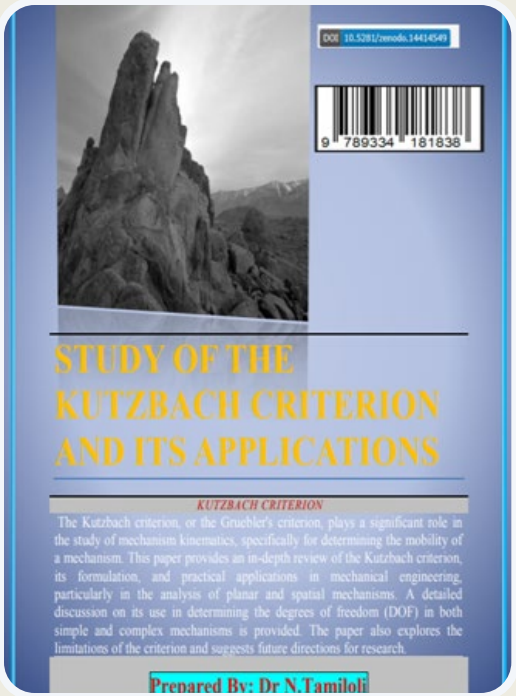
Mauivakkam, Chennai-600048

MECHATRONICS AND IOT
(Lab Manual- Anna University Regulation)

Prepared By
Prof Dr N.Tamiloli
Mr.V.Sounthararasu
Department of Mechanical Engineering,
PERI Institute of Technology,
Chennai-600048.

9 789334 173871



DOI 10.5281/zenodo.14414549

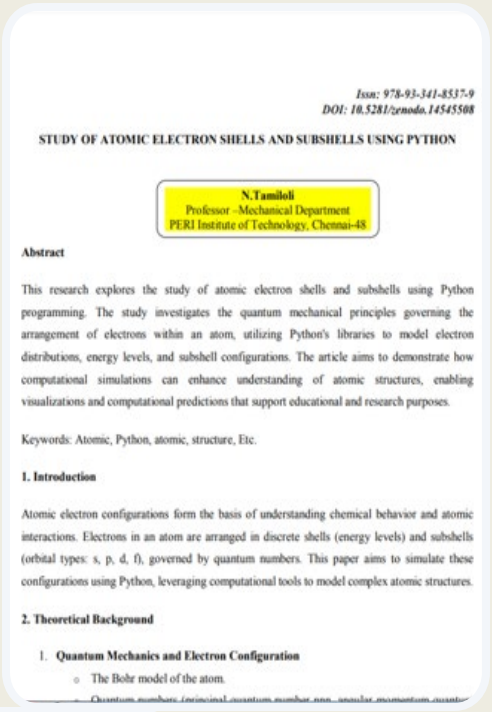
9 789334 181838

STUDY OF THE KUTZBACH CRITERION AND ITS APPLICATIONS

KUTZBACH CRITERION

The Kutzbach criterion, or the Gruebler's criterion, plays a significant role in the study of mechanism kinematics, specifically for determining the mobility of a mechanism. This paper provides an in-depth review of the Kutzbach criterion, its formulation, and practical applications in mechanical engineering, particularly in the analysis of planar and spatial mechanisms. A detailed discussion on its use in determining the degrees of freedom (DOF) in both simple and complex mechanisms is provided. The paper also explores the limitations of the criterion and suggests future directions for research.

Prepared By: Dr N.Tamiloli



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STUDY OF ATOMIC ELECTRON SHELLS AND SUBSHELLS USING PYTHON

N.Tamiloli
Professor –Mechanical Department
PERI Institute of Technology, Chennai-48

Abstract

This research explores the study of atomic electron shells and subshells using Python programming. The study investigates the quantum mechanical principles governing the arrangement of electrons within an atom, utilizing Python's libraries to model electron distributions, energy levels, and subshell configurations. The article aims to demonstrate how computational simulations can enhance understanding of atomic structures, enabling visualizations and computational predictions that support educational and research purposes.

Keywords: Atomic, Python, atomic, structure, Etc.

1. Introduction

Atomic electron configurations form the basis of understanding chemical behavior and atomic interactions. Electrons in an atom are arranged in discrete shells (energy levels) and subshells (orbital types: s, p, d, f), governed by quantum numbers. This paper aims to simulate these configurations using Python, leveraging computational tools to model complex atomic structures.

2. Theoretical Background

1. **Quantum Mechanics and Electron Configuration**
   - The Bohr model of the atom.

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An Up-Thrust for Knowledge

Anil Kumar
Dr. V. Abhilash

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Thank you!