Robotics: Advanced Concepts & Analysis

Information for Students and Teachers

Ashitava Ghosal[1]

[1]Department of Mechanical Engineering
&
Centre for Product Design and Manufacture
Indian Institute of Science
Bangalore 560 012, India
Email: asitava@mecheng.iisc.ernet.in

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Outline

Information for Students

- There are **10 modules** – Introduction (Module 1), Elements of robots (Module 2), Kinematics of serial and parallel robots (Module 3 and 4), Velocity and static analysis of robots (Module 5), Dynamics of robots (Module 6), Motion planning and control (Module 7), Flexible manipulators (Module 8), Wheeled mobile robots (Module 9) and Advanced concepts & topics (Module 10).
- **What to and not to expect** – The material is **not** for a first course in robotics or for beginners wishing to get a *general* understanding of the subject!! Treatment is mathematical and a knowledge of matrix analysis, solution of non-linear equations, ordinary differential equations and its solution, Matlab®or equivalent, and general familiarity with computation using a computer is **essential**.

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- The material is ideally suited for final year Undergraduate or Masters students.
- Modules and lectures marked with a $*$ are **advanced** and can be skipped by undergraduate students.
- For best use and understanding of the material in the Modules and Lectures, the text book *Robotics: Fundamental Concepts and Analysis*, Oxford University Press, 2006 is suggested as an accompanying material.
- Every effort has been made to verify the correctness of the material including the URL's of the websites mentioned in the text. Any error pointed out by readers will be gratefully acknowledged. Please send email to **asitava@mecheng.iisc.ernet.in**.
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- The Modules and Lectures were prepared using open source software **MikTeX** and **Beamer** class files. The figures were drawn using open source graphics software **XFig**.