



# Robotics

## Initial Remarks and Literature

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The information available on these web pages is not replacing the study of the literature. They guide the student through lectures and define the areas which should be studied. They try to supply formulas, images and drawings so they need not be copied from blackboard. The comments and suggestions are welcome.

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The materials consist of copies of slides extended by comments.

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The shallow survey of a robotics is in [11]. Very good analysis of kinematics, statics and dynamics is in [1], the book is of high quality but focused on few problems only. Much wider coverage on kinematics can be found in [12, 6, 10, 4]. Other information can be found in [5], the book is new but contains many errors and the explanation is not very clear. Good overview of mobile robot sensors can be found in [2]. Various aspects of robotics discusses handbooks [7, 9], calibration [13]. All of them are available in Center for Machine Perception library, [1, 12] are also in faculty library (Dejvice). The book [3] is in National Library of Technology on-line. Students capable to read in Czech can use other books listed on web pages of equivalent Czech course.

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You should be aware that engineer should always estimate the calculated results by independent method, you will find that writing bug-free code is pretty difficult. I

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recommend to read at least marked chapter from the book [8], if not the whole one.

- [1] Haruhiko Asada a Jean-Jacques E. Slotine. **Robot Analysis and Control**. New York, USA: John Wiley a Son, 1986, s. 266. ISBN: 0-471-83029-1.
- [2] H. R. Everett. **Sensors for Mobile Robots : Theory and Application**. Wellesley, Massachusetts, USA: A. K. Peters, 1995, s. 528.
- [3] Reza N. Jazar. **Theory of Applied Robotics: Kinematics, Dynamics, and Control**. Springer, 2007, s. 693.
- [4] Reza N. Jazar. **Theory of Applied Robotics: Kinematics, Dynamics, and Control**. 2nd. Springer, 2010, s. 883.
- [5] Phillip John McKerrow. **Introduction to Robotics**. Addison-Wesley, 1991. ISBN: 0-201-18240-8.
- [6] Richard M. Murray, Zexiang Li a S. Shankar Sastry. **A mathematical introduction to robotic manipulation**. Boca Raton: CRC Press, 1994, s. 456. ISBN: 0-8493-7981-4.
- [7] Shimon Y. Nof, ed. **Handbook of Industrial Robotics**. 2nd. New York, NY, USA: John Wiley & Sons, 1999, s. 1348. ISBN: 0-471-17783-0.

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- [8] Henry Petroski. *To Engineer Is Human: The Role of Failure in Successful Design, Chapter 15: From slide rule to computer: Forgetting how it used to be done*. New York, NY: St. Martin's Press, 1985. ISBN: 0-679-73416-3.
- [9] Bruno Siciliano a Oussama Khatib. *Handbook of Robotics*. Springer, 2008. ISBN: 978-3-540-23957-4.
- [10] Bruno Siciliano et al. *Robotics: Modelling, Planning and Control*. Springer, 2009, s. 632.
- [11] Wolfram Stadler. *Analytical Robotics and Mechatronics*. McGraw-Hill, 1995. ISBN: 0-07-113792-0.
- [12] Lung-Wen Tsai. *Robot Analysis : The Mechanics of Serial and Parallel Manipulators*. New York, USA: John Wiley, 1999, s. 505.
- [13] Hanqi Zhuang a Zvi S. Roth. *Camera-Aided Robot Calibration*. Boca Raton, Florida: CRC Press, 1996. ISBN: 0-8493-9407-4.

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