
Guidance of Missiles

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Foreword

These lecture notes cover material on guidance of missiles. The first few chapters are dedicated to the basic concepts of guidance of missiles. The formulation of guidance problems are developed from the basics and both the classical guidance laws and modern guidance laws are covered. The later chapters focus on specific applications of guided missiles and introduce some advanced guidance laws and their variants.

Acknowledgements. These lecture notes have been in the making since 1996 and have gone through several revisions, additions, and changes through class room teaching to master's students at IISc. I am indebted to the students who attended these classes and gave me valuable inputs. The work of my PhD and Master's students also find a place in these notes. However, the two reviewers (Dr. S.E. Talole of DIAT and Dr. A Sinha of IIT-B), who reviewed these specific NPTEL course notes, deserve a special note of thanks for their meticulous review and excellent suggestions.

Suggestions for Students. This web course is designed for self reading and learning although you may have an instructor who will teach you. The best way to learn any new subject is to read and understand it yourself. There are several assignments and questions given at the end of almost all the lectures. The assignments are of two types. the first type is descriptive in which you need to collect information from web resources and books and write a descriptive term paper. The second type are those which may require some familiarity with MATLAB to generate the numerical results and are an important part of learning the subject. You will see that these results will supplement the material in the course notes and help you to understand them better. Finally, the questions are those that help you to test your understanding of the subject. These can be descriptive or numerical.

Suggestions for Instructors. An important aspect of teaching is a continuous but informal evaluation of how much the student has gained in terms of knowledge. Also, the best teacher is one who can get the students involved in the course. The assignments in this web course is designed to get the students interested and involved. As the course is meant for graduate students or senior undergraduates, some of the material in the course is not covered explicitly but is given in the form of assignments through which the students will be able to get a better understanding of the concepts. When you evaluate the assignments please assign marks not just for the results obtained but also to originality, presentation, and interpretation of the results. Encourage them to discuss the results in the light of the course material. Finally, the list of questions given can be used to set questions for tests and final examinations. Note that many questions are similar and may demand answers that are also similar. This repetition is intentional as it gives the instructors more flexibility in selecting questions and for the student to test his/her knowledge gained in the course. Please do allocate marks for the assignments as well as to answers to questions in the test when you are evaluating the students for their final grades.

Finally, both students and instructors, please feel free to contact me over email if you have any questions and/or suggestions.

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