A guide to my lecture notes 1.1

1. Feel free to use my notes if you find them helpful. As I am human, I most likely made mistakes. I’d appreciate it if you could email me (toro@nd.edu) any errors that you have found.

2. Referencing: Eq (3.10) refers to equation (10) in Lecture 2. Within Lecture 3 it is just Eq (10). Same with figures and pages.

3. Throughout my notes I use fairly standard abbreviations. However, for completeness sake here they are:

- w.r.t: with respect to
- iff: if and only if
- s.a.: such as
- f.t.: function

4. Occasionally I use expressions that I have not defined explicitly. These are typically also highlighted with some color other than dark blue. They can be looked up in the literature, e.g. on wikipedia.

5. My handwriting in what it is, it was faster for me to create notes this way (esp. formulas, drawings). The following might help:

1: the number one, 1
7, 7: the number seven, not to be confused with 1 (one).
I: letter I (caps) as in INDIA
J, j: letter J (caps) or in JOHN
G, G: as in GEORGE
v: letter v as in velocity
2, 2: letter z as in zero
i, I, s: letter s as in Sally
m: letter n as in Nancy
m: letter m as in Mary
θ: cursive of the greek theta θ, not to be confused with velocity v.
u: sometimes looks like m (or vice-versa)

The context should select which one.
These notes are based more or less on the book "Classical Mechanics" by H. Goldstein, C. Poole and J. Safko, 3rd ed. ISBN 0-201-65702-3. However, I deviate quite often from the book in ordering of the topics, notations and even content/subject matter. My primary goal is to cover the essential topics in classical mechanics as succinctly as possible, and then provide a primer in both special and general theory of relativity. Most books (including Goldstein) provide way too much material to be covered in a semester of about 40 lectures, 50 minutes each, especially if the instructor also performs calculations in class (my preference) as opposed to just pointing to formulas on slides (not my preference). These notes should cover the essential material in about 40-42 lectures. They are still evolving, version 2.0 will hopefully be quasi-final.

References

- Classical Mechanics, H. Goldstein, C. Poole and J. Safko, 3rd Ed., Addison-Wesley.