

CISC 2210 – Introduction to Discrete Structures

Reading Assignment: Probability

- Choose one or more of the books from the list below, or any other appropriate textbook, and concentrate on the recommended sections. It is best to rely on textbooks, as they are significantly more accurate and reliable than most free materials found online. Completing the assignments and exercises in the book is highly beneficial for mastering the material.
 - “Elements of Discrete Mathematics,” by Hammack. Chapter 7 pages 163–301.
<https://richardhammack.github.io/DiscreteWSP/Chapter7.pdf>
 - “Discrete Math for Computer Science Students,” by Bogart, Drysdale, and Stein. Chapter 5 sections 5.1, 5.2, and 5.3 pages 185–214.
 - “Discrete Mathematics for Computer Science,” by Haggard, Schlipf, and Whitesides. Chapter 8 sections 8.1 – 8.6 pages 475–519.
 - “Discrete Mathematics and Its Applications,” by Rosen 7th edition. Chapter 7 sections 7.1–7.3 pages 445–477.
- The following is a book with a lot of examples and practice problems:
 - Schaum’s ”Theory and Problems of Discrete mathematics,” by Lipschitz and Lipson 3rd edition. Chapter 7 sections 7.1–7.6 pages 123–131. Problems with solutions 7.21–7.27 pages 136–144. Supplementary Problems 7.42–7.70 pages 149–151.
- The following are some online tutorials:
 - ”The 9 concepts and formulas in probability that every data scientist should know”.
<https://statsandr.com/blog/the-9-concepts-and-formulas-in-probability-that-every-data-scientist-should-know/>
 - ”Discrete Mathematics: Probability,” by Tutorialspoint.
https://www.tutorialspoint.com/discrete_mathematics/discrete_mathematics_probability.htm
 - “Probability” in 6 chapters.
[https://math.libretexts.org/Bookshelves/Applied_Mathematics/Book%3A_College_Mathematics_for_Everyday_Life_\(Inigo_et_al\)/03%3A_Probability](https://math.libretexts.org/Bookshelves/Applied_Mathematics/Book%3A_College_Mathematics_for_Everyday_Life_(Inigo_et_al)/03%3A_Probability)
- The following list of video lectures cover the basic ideas. While any of them will be helpful, watching all of them would be ideal.
 - Two independent basic video lectures:
 1. Basic Probability (11:28 minutes)
<https://www.youtube.com/watch?v=KzfwUEJjG18>
 2. Introduction to Probability: Basic Concepts (37:10 minutes)
<https://www.youtube.com/watch?v=CBnGs9t6RxY>

– A 5 lecture tutorial:

1. Basic probability part I (4:50 minutes)
<https://www.youtube.com/watch?v=QfKk3sxxg00Y&list=PLW0gavSzhM1TKBNbHH5u1SNnsrOaacKLu>
2. Basic probability part II (4:41 minutes)
<https://www.youtube.com/watch?v=m2y5hJ5DDQg&list=PLW0gavSzhM1TKBNbHH5u1SNnsrOaacKLu>
3. And and Or rules (5:47 minutes)
https://www.youtube.com/watch?v=5m8-5pm_KT8
4. Modeling the sample space with cross tables (3:08 minutes)
<https://www.youtube.com/watch?v=UX489ku79hU&list=PLW0gavSzhM1TKBNbHH5u1SNnsrOaacKLu&index=12>
5. Modeling the sample space with tree diagrams (6:0 minutes)
<https://www.youtube.com/watch?v=nfXKfQFKv4Y&list=PLW0gavSzhM1TKBNbHH5u1SNnsrOaacKLu&index=39>

– Ms Hearn 6 part very basic videos:

1. Theoretical Probability Basics (7:05 minutes)
https://www.youtube.com/watch?v=G12t4oFP_0Y
2. Empirical or Experimental Probability (3:22 minutes)
<https://www.youtube.com/watch?v=kB0m6p3SFn4&t=12s>
3. Law of Large Numbers and Experimental and Theoretical Probabilities (4:08 minutes)
https://www.youtube.com/watch?v=ruq_3tg_kjw&t=54s
4. Odds and Converting Between Odds and Probability (6:45 minutes)
<https://www.youtube.com/watch?v=afIieJhBFas&t=33s>
5. Probability of NOT (6:30 minutes)
<https://www.youtube.com/watch?v=DrwgH0ERH4c&t=56s>
6. Probability of OR (6:34 minutes)
https://www.youtube.com/watch?v=K7nSHz_3jzE&t=263s

– TrevTutor Discrete Math 2, the chapter on Counting and Probability, lectures 3,4,5.

https://www.youtube.com/playlist?list=PLDDGPdw7e6Aj0amDsYInT_8p6xTSTGEi2

1. Discrete Probability (12:35 minutes)
<https://www.youtube.com/watch?v=FHRuqc0eHdw>
2. Axioms of Probability (18:01 minutes)
<https://www.youtube.com/watch?v=xuv6BCR-iNc&feature=youtu.be>
3. Conditional Probability (21:19 minutes)
<https://www.youtube.com/watch?v=BxQPdvNRqrc&feature=youtu.be>

– Two introductory lectures:

1. Introduction to Probability (24:35 minutes)
<https://www.youtube.com/watch?v=HHeQn3r0icY>
2. And, Or, and Conditional Probability (23:44 minutes)
<https://www.youtube.com/watch?v=s5kN9TvqDjE&t=686s>