**OCD materials Discrete Structures**

1. **video links for lectures with description**

Lecture 1 section 1.1 Propositional Logic

<https://www.youtube.com/watch?v=H6wU11QiwUU&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=1&t=419s>

Lecture 2 section 1.2 Applications of Propositional Logic

<https://www.youtube.com/watch?v=2HZ5QhrPd7Y&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=2>

Lecture 3 section 1.3 Propositional Equivalences

<https://www.youtube.com/watch?v=90YRaPJk9_w&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=3>

Lecture 4 section 1.4 Predicates and Quantifiers

<https://www.youtube.com/watch?v=GYElERkwaF0&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=4>

Lecture 5 section 1.6 Rules of Inference

<https://www.youtube.com/watch?v=_k6HF08njh4>

Lecture 6 section 1.7 Introduction to Proofs

<https://www.youtube.com/watch?v=2e9FR4kTSPM&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=5>

Lecture 7 section 1.8 Proof Methods and Strategy

<https://www.youtube.com/watch?v=8qYGEqnFRz8&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=6>

Lecture 8 section 5.1 and 5.2 Mathematical Induction and strong induction

<https://www.youtube.com/watch?v=eIoBmoMJSio&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=7>

<https://www.youtube.com/watch?v=WQyKzRzV6Vw&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=8>

Lecture 9 section 2.1 and 2,2 Sets andSet Operations

<https://www.youtube.com/watch?v=TN4GFb5W0po>

<https://www.youtube.com/watch?v=5CaaGLtmvvQ>

Lecture 10 section 2.3 Functions

<https://www.youtube.com/watch?v=VQQr7Wyvi9w>

Lecture 11 section 2.4 Sequences and Summations

https://www.youtube.com/watch?v=\_jZi47YeDdk

Lecture 12 section 2.5 Cardinality of Sets

<https://www.youtube.com/watch?v=3m9tauEtues>

Lecture 13 section 4.1 Divisibility and Modular

Arithmetic

<https://www.youtube.com/watch?v=yF5njDbBkqI&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=9>

Lecture 14 section 4.3 and 4.4 Primes and Greatest Common Divisors andSolving Congruences

<https://www.youtube.com/watch?v=mfzzi4IysYg&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=10>

Lecture 15 section 6.1 and 6.2 The Basics of Counting and The Pigeonhole Principle

<https://www.youtube.com/watch?v=Ra_3GR84rnc&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=11>

Lecture 16 section 6.3 and 6.4 Permutations and Combinations andBinomial Coefficients and Identities

<https://www.youtube.com/watch?v=VywrJz4z1xc&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=12>

Lecture 17 section 6.5 Generalized Permutations and Combinations

<https://www.youtube.com/watch?v=VywrJz4z1xc&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=12>

Lecture 18 more on counting

<https://www.youtube.com/watch?v=mfGqKo4kW1k&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=13>

Lecture 19 section 8.1 Applications of Recurrence

Relations

<https://www.youtube.com/watch?v=7FY14NfrZRM&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=14>

Lecture 20 Section 8.2 Solving Linear Recurrence Relations

<https://www.youtube.com/watch?v=uSqFTI2Dp4A&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=15>

Lecture 21 section 7.1 An Introduction to Discrete

Probability

<https://www.youtube.com/watch?v=x5TIZMZpWHM>

<https://www.youtube.com/watch?v=ug08tMKxtZw>

Lecture 22 Section 7.2 Probability Theory

<https://www.youtube.com/watch?v=Zzu9Ikubx38>

<https://www.youtube.com/watch?v=bHUUYlBzr2Q>

lecture 24 9.1 Relations and Their Properties

<https://www.youtube.com/watch?v=dbihQ6tiRJ0>

<https://www.youtube.com/watch?v=Crsyv7upe9g>

Lecture 24 section 9.3 Representing Relations

<https://www.youtube.com/watch?v=KK-gZo2N0wk>

<https://www.youtube.com/watch?v=9a39kWlFg-s>

Lecture 25 section 9.5 Equivalence Relations

<https://www.youtube.com/watch?v=ZgcTX16borA>

Lecture 26 section 10.1 Graphs and Graph Models

<https://www.youtube.com/watch?v=-bZ-jHyFwxM&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=16>

Lecture 27 section 10.2 Graph Terminology and Special Types of

<https://www.youtube.com/watch?v=2iEtdpP8Hwc&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=17>

Lecture 28 section 10.3 Representing Graphs and Graph Isomorphism

<https://www.youtube.com/watch?v=tqkcii37_34&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=18>

Lecture 29 section 10.4 Connectivity

<https://www.youtube.com/watch?v=iIDJRcErhoM&list=PLtQtS00GBIKfRTYFStvdflNGPDfZ6Zb9-&index=19>

Lecture 30 11.1 Introduction to Trees

<https://www.youtube.com/watch?v=7zCfu_phf2w>

Lecture 31 section 11.3 Tree Traversal

<https://www.youtube.com/watch?v=Su9Fz5vxuNI>

Lecture 32 section 11.4 Spanning Trees

<https://www.youtube.com/watch?v=6WZvVJ0Q1FA>

1. **Recommended book**

<https://drive.google.com/file/d/1iyrcZDX4ztMMQXeoYbzlTMic6fm25gHc/view?usp=sharing>

1. **Discrete Structures Course outline**

<https://drive.google.com/file/d/15VvVXRRIQAGOJiNKc7xxFF_6Z-5xn74j/view?usp=sharing>

1. **Assignments and home works**

<http://math.fau.edu/~dpucinskaite/Discrete_Mathematics_Homework%20assignments_Fall_2015_1.html>

<https://www.maths.tcd.ie/~dwilkins/Courses/MA2C01/>