

Course Plan

| Week | | Topics | Reference Materials (Books/Titles, Journals, Web articles, etc) |
|------|-----------|---|--|
| 1 | Lecture | Chapter 1 Trees - Trees - Properties of trees - Labelled trees - Tree searching - Prefix form, infix form and postfix form of arithmetic expression | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Tutorial | Tutorial 1: Chapter 1 | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Practical | NA | |
| 2 | Lecture | - Binary search tree - Undirected trees - Spanning tree - Breadth-first search and depth-first search | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Tutorial | Tutorial 1: Chapter 1 Tutorial 2: Chapter 1 | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Practical | NA | |

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| 3 | Lecture | <ul style="list-style-type: none"> - Minimal spanning trees - Prim's algorithm, Kruskal's algorithm | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Tutorial | Tutorial 2: Chapter 1 | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Practical | NA | |
| 4 | Lecture | Chapter 2 Languages <ul style="list-style-type: none"> - Phrase structure grammar - Derivation tree - Backus-Naur Form | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Tutorial | Tutorial 3: Chapter 2 | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Practical | NA | |
| 5 | Lecture | <ul style="list-style-type: none"> - Syntax diagrams - Regular expressions | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Tutorial | Tutorial 3: Chapter 2 | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Practical | NA | |

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| 6 | Lecture | - Types of grammars Chapter 3 Semigroups and groups - Binary operations. | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Tutorial | Tutorial 3: Chapter 2 Tutorial 4: Chapter 3 | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Practical | NA | |
| 7 | Lecture | - Semigroups, products and quotients of semigroups. - Monoid - Groups, subgroups | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Tutorial | Tutorial 4: Chapter 3 | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Practical | NA | |
| 8 | Lecture | - Cosets - Products and quotients of groups. Chapter 4 Finite State Machines - Finite State Machines, Transition table and transition diagram | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Tutorial | Tutorial 4: Chapter 3 Tutorial 5: Chapter 4 | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
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| 9 | Lecture | - Congruence relation and quotient machines - Moore recognition machine and Language of the machine | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Tutorial | Tutorial 5: Chapter 4 | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Practical | NA | |
| 10 | Lecture | - Simplification of Moore machines | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Tutorial | Tutorial 5: Chapter 4 | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Practical | NA | |
| 11 | Lecture | - Non-deterministic automata Chapter 5 Coding - Coding of binary information and error detection. - Parity check code - Hamming distance | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Tutorial | Tutorial 5: Chapter 4 Tutorial 6: Chapter 5 | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Practical | NA | |

| Week | | Topics | Reference Materials (Books/Titles, Journals, Web articles, etc) |
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| 12 | Lecture | <ul style="list-style-type: none"> - Maximum likelihood decoding - Group code - Decoding table | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Tutorial | Tutorial 6: Chapter 5 | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Practical | NA | |
| 13 | Lecture | <ul style="list-style-type: none"> - Syndrome decoding Chapter 6 Code for Data Compression <ul style="list-style-type: none"> - Binary code of variable length, Prefix property | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Tutorial | Tutorial 6: Chapter 5 | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Practical | NA | |
| 14 | Lecture | <ul style="list-style-type: none"> - Huffman code for data compression - Lower bound for expected code length, Entropy, Relative efficiency | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Tutorial | Tutorial 7: Chapter 6 | 1. Epp, S. S. (2020). Discrete mathematics with applications (5th ed.). Cengage 2. Seymour Lipschutz, Marc Lipson, & McGraw Hill etextbook. (2021). Schaum's outline of discrete mathematics, 4th edition (fourth ed.). McGraw-Hill. |
| | Practical | NA | |