The objective of the course is to learn data-structure and algorithmic methods for solving problems on strings, such as pattern matching and edit distance computation.

**String data-structures**
1. Suffix tree: definition and usage for text indexing.
2. Generalized suffix tree: definition and usage for finding longest palindrome.
3. Suffix array: definition and usage for text indexing.
4. Suffix trays.
5. Succinct indexes (FM-index)
6. Construction of suffix trees and suffix arrays in linear time.
7. Construction of suffix arrays in linear time (large alphabet).
8. RMQ and LCA: reductions between the two problems, a linear space data-structure for RMQ.

**Pattern matching**
1. Exact matching algorithms: KMP, Shift-Or, Boyer-Moore.
2. Parameterized matching.
3. Matching with don’t cares.
4. Approximate pattern matching.
5. Two-dimensional pattern matching.
6. Two-dimensional parameterized matching.

**Edit distance and alignment problems**
2. Sub-quadratic edit distance computation.
3. DIST matrices: definition and applications.
5. Multiplication of DIST matrices.
6. Edit distance of compressed strings
7. Edit distance with moves.
8. Tree edit distance.

מרוכבים ציון הקורס
1. בוחן (100%)