



Computer Engineering and Software Systems Program
(Senior 1 Level), Computer and Systems Engineering

Assignment, Spring 2023/2024

Course Code: **CSE 486**

Bioinformatics

The Assignment Consists of **Two** Questions in **Four** Page.

Maximum Marks: **10 Marks**

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Question (1): [7 Marks]

Alignment with affine gap penalties problem: Construct a highest- scoring global alignment between two strings (with affine gap penalties). The inputs are Two strings v and w , a scoring matrix $Score$. The output is highest-scoring global alignment between these strings, as defined by the scoring matrix $Score$ and by the gap opening and extension penalties. Implement it using three matrices.

Question (2): [3 Marks]

Implement a function (and any helper functions) that takes two DNA sequences and shows the graphical representation of all required steps to get their global alignment using the 2. Needleman-Wunch Algorithm.