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| **Practicum Case** |  |
| SCIE6062 | SCIE6062001 | SCIE6062016 | SCIE6062049  Computational Biology |
| **Mathematics & Statistics** | **E231-SCIE6062-VO01-02** |
| ***Valid on*** *Even Semester Year 2022/2023* | **Revision 00** |

**Learning Outcome**

* LO3 – implement basic bioinformatics analysis in scope of DNA composition and sequence analysis, protein synthesis, sequence alignment, and other works related to biological database using Biopython
* LO4 – analyze the basic bioinformatics analysis results using Biopython

## Topic

* Session 02 – DNA Composition Analysis

## Sub Topics

* GC and AT Composition on DNA
* Melting Point of DNA
* Nucleotide Molecular Weight

## Soal

*Case*

For given **DNA sequences**:

Sequence A:

**AGCTTGCAGCGTCCGTTAGCTCGAGTCCAGGACGTTAGTCCTGCAGTC**

Sequence B:

**CAGTAAGTTGCCGTTAGCGCGTAGTGCCAGTAAGCGGCTCGTTAGTGG**

Please use **Biopython** to:

* Determine the **molecular** **weight** of **both sequence**.
* Refer to the **Wallace** **rule** to **calculate** the **melting** **point** of **sequence** **A** and **sequence** **B** and **plot** them using **Matplotlib** library (Use Bar Chart).
* **Calculate** the **GC** **content** of **sequence** **A** and **sequence** **B**.
* **Calculate** the **AT** **content** of **sequence** **A** and **sequence** **B**.
* **Plot** the **GC and** **AT** **content** of **sequence** **A** and **sequence** **B** using **Matplotlib** library (Use Pie Chart).