At the end of the course, students with satisfactory performance will be able to

1. apply knowledge learned from the prokaryotic transcription and translation processes to optimize protein production in *E. coli* using the recombinant DNA technology.

2. explain the principle of surface plasmon resonance and apply this technology to study biomolecular interactions.

3. describe footprinting techniques to study protein-nucleic interactions.

4. explain prokaryotic gene regulation via transcriptional/translational controls and stabilities of biomolecules.

5. describe the technologies for DNA sequencing and the assembly of genome sequences, including next-generation sequencing methods

6. describe and compare gene organizations in bacteria, yeast, worm, fly and humans

7. explain the mechanisms and significance of regulatory roles of RNA in the cell, including catalytic RNAs, riboswitches, and RNAi