Project Milestone 3

Milestone	Brief Description	Deadline
3: SA (6%)	Implementation of Simulated Annealing (SA) algorithm on your specific problem.	Week 6: Thursday, **23 October 2025**

Milestone 3 Objectives:

1. Simulated Annealing (SA) Implementation:

- Based on the problem formulation, implement SA for your project topic.
- Visualize the resulting solutions via illustrative figures.
- Validate the algorithm by testing on case studies and comparing to results from previous literature or known benchmark problems tackling the same problem.
- Test the algorithm on different case studies of varying sizes and complexity.

2. Progress Report:

- Explain and illustrate your implementation of the algorithm for your problem (e.g. via algorithm pseudocode or flowchart); including problem-specific considerations (e.g. neighborhood operators).
- Describe all case studies and specify the used input parameters for each case study.
- Report and discuss the results of your algorithm validation.
- Report and discuss all obtained results of each case study.
- Analyze and discuss the algorithm's performance and the effect of the different algorithm parameters on its performance.

Programming Languages:

- In case Python was the chosen programming language, you may use MATLAB only for generation of graphs, figures, charts and animated figures, or use matlabplotlib library in Python to generate the visualizations.
- Your codes should be runnable on any machine (i.e. usage of toolboxes/packages is not allowed).

Minimum Requirements:

- Implementation of SA on your problem.
- Visualization of resulting solutions.
- Validation of results.
- Discussion and analysis of results via different methods.

Deliverables:

1. Progress report (in provided template) in accordance to objectives above.
2. Your implemented codes for SA and for all case studies and results.
   Note: the implemented codes must contain clear comments that describe each part.
3. Screen-recorded video of your codes running and the codes' results including the visualization of the results with narrated comments.

Submission Deadline:

- The deadline of Milestone 3 submission is on **Thursday,23 October 2025, at 23:59**.

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The milestone will be graded based on several criteria including **but not limited to**:

- Quality of all submitted material.
- For codes implementation: scalability, modularity, documentation (i.e. well commented), etc.
- For results analysis and discussion: analysis of results (numerical, graphical, performance metrics, parametric studies, statistical studies, etc.) in light of the specific problem on-hand; as well as commenting on noticed trends and ability to highlight recommendations for improvement.
- For reporting: clarity of presentation and professional discussion with multiple aids (e.g. block diagrams, flowcharts, figures, tables, graphs, charts, etc.). Equations should be written professionally with proper identification of nomenclature.