Course Project (Due: 23:59 June 12, 2022)

- Find an interesting topic to work with, and write a report (either in Chinese or in English). The report should contain necessary components such as literature study, model/theory, numerical experiments, etc., while being concise. An unnecessarily long report will *negatively* impact your grade.

- You are free to choose to any topic that is related to what you have learned from this course. Some possible choices are provided as follows.

  - Implement a (reasonably complicated) numerical algorithm that is not covered by the course materials. (E.g., FFT for arbitrary length, 2D/3D FEM for a non-rectangular region, Zolotarev rational approximation, filter-based eigensolver, ...)

  - Analyze certain theoretical properties of a numerical algorithm (beyond the course materials). (E.g., perturbation analysis, convergence analysis, rounding-error analysis, ...)

  - Establish models for some real world subjects and develop the corresponding numerical methods. (E.g., simulating n-body problems, encoding/decoding multimedia files with your own compressed data format, ...)

  - Other fancy subjects that you can imagine.

- You are encouraged to search online for existing work related to your topic. Keep in mind that appropriate citations are required.

- You are *not* encouraged to collaborate with others, though discussions are permitted. Remember that helpful discussions should be properly acknowledged in the report.

- Submit necessary supplementary data (programs, test examples, etc.) along with your report. The entire submission *cannot exceed* 16 *MB* unless otherwise approved.