The second examination will be held on Monday, the 9th of November. It will be an in class, closed book examination. You will have 75 minutes (03:30 p.m. to 04:45 p.m.) to earn 75 points. You are allowed to use calculators and a (single sided) crib sheet (A4 sized, i.e., 8.5” × 11”).

Preparing a crib sheet can be a useful study aid, so take time in selecting material for it. You are allowed only one crib sheet and you may use only the front side of the crib sheet. You can write as small as you like on the crib sheet; but, you are not allowed to bring magnifying glasses. No mechanical or electronic reproductions are allowed. I will be checking that your crib sheet meets the requirements.

You are responsible for all material covered in lectures (up to the lecture on 28th Oct). There will not be any direct questions form the mathematical background. Also, there will not be any direct questions from the material already covered in the first examination. However, you can not afford to forget them as they form the basis for the rest of the material and knowledge of them might be required indirectly. Hence, I am including them also in the following list of topics to refresh your memory.

- General Introduction to the Course
- Mathematical Background
- Strings and Languages.
- DFA: Definition, Examples, Analysis and Design.
- NFA: Definition, Examples, Analysis and Design.
- Equivalence of NFA and DFA.
- NFA with \( \epsilon \) transitions: Definition, Examples, Analysis and Design.
- Equivalence of NFA with \( \epsilon \) transitions to ordinary NFA.
- Closure Properties of Regular Languages.
- Regular Expressions: Definition, Examples, Analysis and Design.
- Kleene’s Theorem: Equivalence of Regular Expressions and Finite Automata.
- Myhill-Nerode Theorem: Statement and Proof of it.
- Proving Languages to be non-regular using Myhill-Nerode Theorem.
- State Minimization Algorithm for DFA using successive refinement of partitions.
The tentative format of the exam is as follows. There will be five questions in the examination each worth 15 points. The first question will be an objective type question (fill in the blanks or true/false or multiple choice or match the following). The remaining four questions will be problems that need to be solved or statements that need to be proven.