

## Extra Credit 1 Revision 1

The due date has been changed to April 13, 2022.

**Due:** April 13, 2022

**Points:** 20

Remember, you must *justify all your answers*.

1. The classical batch processing system completely ignores the cost of increased waiting time for users. Consider a single batch characterized by the following parameters:

- $M$  average mounting time
- $T$  average service time per job
- $N$  number of jobs
- $S$  unit price of service time
- $W$  unit price of waiting time per user

Show that the optimal batch size minimizing the cost of service time and waiting time per user within a single batch is

$$N_{opt} = \sqrt{\frac{MS}{TW}}$$