CSCI 351 — Principles of Parallel Computing

Jeremy Iverson

College of Saint Benedict & Saint John's University

logistics

- instructor(s)
  - Jeremy Iverson (`jiverson002@csbsju.edu`)
  - MAIN 258, (320) 363-5542
  - *Zoom* office hours: TBD
- textbook
  - *An Introduction to Parallel Programming,* 1st Edition, Pacheco
- website
  - `https://csbsju.instructure.com/courses/14840`
- zoom
  - `https://csbsju.zoom.us/j/91795643146?pwd=`
    `ZGFRejNkcTlzQ3FISktTb1V5aysxZz09`

I prefer to be called Jeremy
I am married and my wife and I have five children, age six and under, the youngest is 1 month old
Encourage questions right away
Emphasize the importance of the Canvas site for finding information about the class

zoom etiquette

- all students should be logged into Zoom, including those in the classroom
- keep microphone muted unless you are talking
- use raise hand feature if you need the instructor's attention
- monitor chat window; use chat feature to:
  - comment or add appropriate input during class activities, or
  - ask questions that are not time sensitive.

I will address questions asked in chat, as time allows; questions which are not answered, I will address outside of class via Canvas announcement or discussions.

zoom test

after zoom is setup and working for students, take a break until ?????

class structure

- class will be organized around 25 minute blocks
- between each block, we will take a 5 minute break

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  - because there are an abundance of breaks scheduled, please wait until a break to take care of things that require you leaving your seat, unless absolutely necessary

a goal of this schedule is to reduce the impact of internal and external interruptions on focus and flow.

today's schedule

- syllabus
- motivation for studying parallel computing
- challenges of parallel computing
- workflows for our high-performance cluster
- brief review of CPU and memory

course objectives

Presents the theoretical foundations of parallel computing and an overview of several parallel computing models. Exposes students to current parallel programming models and systems through projects. Teaches students the ability to determine the most appropriate model for a given task.

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we will study the two most common parallel computing models used in practice, and briefly discuss a third

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this will be structured in a similar way as CSCI 338 for those who have taken that course. although the material there will not be required for this class, it will be helpful. all that will be required here is a sound understanding of asymptotic analysis of functions (i.e., big-oh).

- first, we will study a framework for analyzing parallel algorithms
- then we will study techniques for decomposing a problem in order to formulate a parallel solution

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throughout the course, we will be applying what we are learning via a series of programming assignments

assignments

- four (4) assignments (serial, Pthreads/OpenMP, MPI, ???)
  - all assignments are to be written in C or C++
- do your own work
- use each other as resources only
- due dates are strict (no partial credit for late assignments)

Should be student's own work, may work together but must individual solutions

Want to encourage using each other as resources, but do not want some students to rely on other students for answers

Make-up exams are possible under certain circumstances

- two (2) in-class exams (closed book / closed note)
- one (1) in-class final exam (closed book / open note) [cumulative]

grading

- point distribution
  - assignments: 50% total
  - exams: 15% each
  - final: 20%

scholastic conduct

- Work must be completed in a manner consistent with the College of Saint Benedict's & Saint John's University's codes for academic honesty (read that $here \rightarrow$ Academic Catalog $\rightarrow$ Academic Policies and Regulations $\rightarrow$ Rights and Responsibilities).
- Copying another's work, allowing (even negligently) others to copy your work, relying heavily on information that you found on the web, is cheating and grounds for penalties in accordance with the institutional policies.
- There will be an absolutely zero tolerance policy. Any copying issues that will arise will be automatically reported to the institution.

expectations

- prepare for class (do the reading!)
- participate in class
- be respectful

- Don't just read, by try your best to make sense of the material
- Emphasize that students are not just recipients of my knowledge — they can shape the direction of the course
- Encourage students to stop and think before replying.
- Don't be discouraged if comprehension is not apparent right away, but don't be complacent
- Students can expect the same things from me.

office hours

- stop by anytime
- my calendar

Mention outlook calendar & my home page
For those unfamiliar with Outlook meetings, then they should schedule another way and we will go over this in meeting
Mention not generally availability in the mornings

questions?