**Blue Waters Petascale Semester Curriculum v1.0**

**Unit 2: Parallel Computing Concepts**

**Lesson 1: Types of Parallel Work - Data and Task Parallelism**

**Instructor Guide**

*Developed by Peter J. Hawrylak for the Shodor Education Foundation, Inc.*

No materials or other requirements are needed for this lesson.

The PowerPoint slides provide a basis for a 10-15 minute introductory/overview lecture followed by 10-15 minutes of in-class problem solving/example problems to apply the concepts from the overview. Homework problems provide exercises for students to work either in-class or at home. The PowerPoint slides (overview lecture and in-class example problems) should cover the 20-25 minutes with the homework problems reinforcing and expanding on the material. The PowerPoint slides are in a very basic format to simplify customization to a desired background.

It is suggested to have the students work the homework problems on their own and then present solutions during class with a discussion period for each problem. The homework problems can be extended to increase difficulty or this can be used to help facilitate discussion during the in-class discussion of the problems.

**Common Pitfalls for Instructors and Students**

**Instructors:**

* None

**Students:**

* Sometimes both data and task parallelism are needed to efficiently parallelize a problem.



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*We welcome your improvements! You can submit your proposed changes to this material and the rest of the curriculum in our GitHub repository at*[*https://github.com/shodor-education/petascale-semester-curriculum*](https://github.com/shodor-education/petascale-semester-curriculum)

*We want to hear from you! Please let us know your experiences using this material by sending email to* [*petascale@shodor.org*](mailto:petascale@shodor.org)