

Teaching Activities

Created and taught undergraduate computer science course on Vertically Integrated Program (VIP), 2017 - present.

Created and taught graduate computer science course on heterogeneous systems, 2016 - 2017; HPC for Scientific Applications, 2017-2020, Data Science 2020.

Vertically Integrated Course (VIP): Students can enroll into this course with 1, 2, or 3 credits. The first time a student enrolls, he/she will enroll for 1 credit. The second time onwards the student could enroll for more than 1 credit, upon the instructor's discretion.

CISC/ELEG 1xx-4xx: Undergraduate Courses

CISC 6xx-8xx: Graduate Courses

Courses Taught (Semester, Course Title, Enrolment, Credits):

- Fall 2015
CISC 662 Computer Systems: Architecture, 7, 3
- Spring 2016
CISC 849 Advance topics in Computer Applications: Programming heterogeneous systems, 8, 3
- Fall 2016
CISC 360 Computer Architecture, 40, 3
- Spring 2017
CISC 849 Advance topics in Computer Applications: Programming heterogeneous systems, 16, 3
ELEG 467 Vertically Integrated Program: High Performance Computing, 15 = 10 (1 credit), 5(2 credits)
- Fall 2017
CISC 360 Computer Architecture, 44, 3
CISC 662 Computer Systems: Architecture. 16, 3
CISC 467 Vertically Integrated Program: High Performance Computing, 8, 1
ELEG 467 Vertically Integrated Program: High Performance Computing, 4, 1
- Spring 2018
CISC 849 Advance topics in Computer Applications: HPC for Scientific Applications, 9, 3
CISC 467 Vertically Integrated Program: High Performance Computing, 4 = 3 (1 credit), 1 (2 credits)
ELEG 467 Vertically Integrated Program: High Performance Computing, 2, 1
- Fall 2018
CISC 360 Computer Architecture, 24, 3
CISC 662 Computer Systems: Architecture, 22, 3
CISC 467 Vertically Integrated Program: High Performance Computing, 9 = 8 (1 credit), 1 (2 credit)
ELEG 467 Vertically Integrated Program: High Performance Computing, 2 = 1 (1 credit), 1 (1 credit)
- Spring 2019
CISC 849 Advance topics in Computer Applications: HPC for Scientific Applications, 9, 3
CISC 467 Vertically Integrated Program: High Performance Computing, 10 = 9 (1 credit), 1 (2 credit)
ELEG 467 Vertically Integrated Program: High Performance Computing, 1 (1 credit)
- Fall 2019
CISC 372 Parallel Computing, 44, 3
CISC 187/287/387/487 Vertically Integrated Program: High Performance Computing, 9 = 1 (1 credit), 4

(1 credit), 3 (1 credit), 1 (1 credit)

ELEG 487 Vertically Integrated Program: High Performance Computing, 2 (2 credits)

- Spring 2020

CISC 849 Advance topics in Computer Applications: HPC for Scientific Applications, 14, 3

CISC 187/487 Vertically Integrated Program: High Performance Computing, 4 = 2 (2 credits), 2 (2 credits)

ELEG 187 Vertically Integrated Program: High Performance Computing, 2 (1 credit)

- Fall 2020 (enrollment in progress)

CISC 662 Computer Systems: Architecture

CISC 849 Advance topics in Computer Applications: Data Science and its applicability

CISC 187/287/387/487 Vertically Integrated Program: High Performance Computing

ELEG 187/287/387/487 Vertically Integrated Program: High Performance Computing

TEACHING OVERVIEW

A Courses Taught

Graduate Level

- [1] Computer Systems - Architecture (CISC662)
 - (a) Fall 2015, 7 students
 - (b) Fall 2017, 12 students
 - (c) Fall 2018, 22 students
 - (d) Fall 2020, (enrollment in progress)

- [2] Advanced Topics in Computer Applications (CISC849)
 - (a) Spring 2016, 8 students
 - (b) Spring 2017, 16 students
 - (c) Spring 2018, 9 students
 - (d) Spring 2019, 12 students
 - (e) Spring 2020, 14 students
 - (f) Fall 2020, (enrollment in progress)

Undergraduate Level

- [1] Computer Architecture (CISC360)
 - (a) Fall 2016, 40 students
 - (b) Fall 2017, 44 students
 - (c) Fall 2018, 24 students

- [2] Parallel Programming (CISC372)
 - (a) Fall 2019, 44 students

- [3] Vertically Integrated Projects: High Performance Computing (CISC, ELEG)
 - (a) Spring 2017 (ELEG467), 15 students
 - (b) Fall 2017 (CISC467, ELEG467), 12 students
 - (c) Spring 2018 (CISC467, ELEG467), 6 students
 - (d) Fall 2018 (CISC467, ELEG467), 11 students
 - (e) Spring 2019 (CISC467, ELEG467), 11 students
 - (f) Fall 2019 (CISC 187/287/387/487, ELEG 487), 10 students
 - (g) Spring 2020 (CISC 187/287/387/487, ELEG 487), 6 students
 - (h) Fall 2020 (CISC 187/287/387/487, ELEG 487), (enrollment in progress)

B Curriculum Development

Vertically Integrated Projects: I created an High Performance Computing course (HPC) under the VIP program that has been in place at UDEL since Fall 2016. I have been teaching VIP-HPC course since Spring 2017, every semester - till date. The course presents a transformative approach to engaging undergraduate students spanning freshmen through senior in ambitious, long-term, large-scale, multidisciplinary research projects. In this course, students typically work in teams. The students are evaluated twice during the semester.

To that end, here are some of the selective outcomes: 2 VIP students worked on an interdisciplinary project in collaboration with the Department of Chemistry at UDEL. This project led to a publication in the highly reputed PLOS journal in May 2020. Please click [here](#) for access to the full paper.

Two other VIP students have been working on the Department of Energy (DOE) Exascale Computing Project (ECP) where the goal is to develop testcases for the widely popular directive-based programming model, OpenMP.

Till date, I have mentored 67 students under this project since Spring 2017. Two of the students who worked with me in the VIP project capacity, have joined my research group as PhD students.

C Individual Student Guidance

MS Independent Study Students

- [1] Jose Monsalve Diaz: Fall 2015
- [2] Arnov Sinha: Spring 2017
- [3] Robert Searles: Spring 2018
- [4] Sanhu Li: Spring 2019
- [5] Sanhu Li: Summer 2019
- [6] Sanhu Li: Fall 2019

Undergraduate Independent Study Students

- [1] Will Weber: Winter 2016
- [2] Will Weber: Spring 2016
- [3] Suhan Patel: Summer 2016
- [4] Ryan Beneck: Fall 2016
- [5] Collin Clark: Fall 2016
- [6] Daniel Liang: Fall 2016
- [7] Daniel Liang: Spring 2017
- [8] Qichao Hong: Spring 2017
- [9] Eric Wright: Fall 2017

[10] Eric Wright: Spring 2018

[11] Ryan Dotts: Spring 2018

[12] Wenyi Yin: Spring 2018

Summer Scholar Students

[1] Ryan Beneck: Summer 2016

[2] Collin Clark: Summer 2016

[3] Daniel Liang: Summer 2016

D Teaching Honors and Awards

[1] NVIDIA GPU Education Center Award, June 2016

[2] NVIDIA Curriculum Development Award : Creating teaching content for NVIDIA's teaching kit. Duration: 05/01/2020 - on-going

E Teaching Kits Development

[1] Github: OpenACC Teaching Materials <https://github.com/OpenACC/openacc-training-materials>

[2] Docker Container with OpenACC Teaching Materials in collaboration with NVIDIA: <https://ngc.nvidia.com/catalog/containers/hpc:openacc-training-materials>