***Vietnam National University, Hanoi***

***University of Engineering and Technology***

**Data structures and algorithms**

**2017-2018**

# **Faculty Information**

* Instructor: Le Sy Vinh, office Location: 302, E3 Building , email: [vinhls@vnu.edu.vn](mailto:vinhls@vnu.edu.vn)
* Tutor: Nguyen Duc Canh , office Location: 319, E3 Building , email: [canhnd@vnu.edu.vn](mailto:canhnd@vnu.edu.vn)

# **Resources**

* Introduction to algorithms (Thomas H. Cormen, et al.)
* Data structures and algorithms in C++ (Adam Drozdek)
* Data structure and program design in C++ (Robert L. Kruse and Alexander J. Ryba)
* The complete reference C++ (Herbert Schildt)
* Course Reading material
* Cấu trúc dữ liệu và giải thuật (PGS. Đinh Mạnh Tường)
* Coursera

# **Purpose of the Course**

* To introduce the basic data structures and algorithms
* To develop skills in the design and analysis of algorithms and data structures
* C++ as the programming language – but the focus in on concepts

*Note that you will be using C++ as a vehicle towards these goals*

# **Course Description**

* Data structure and algorithm background
* Queue, stack, priority queue, map, hash table
* Analysis of algorithms
* Recursion
* Sorts (bubble sort, quick sort, merge sort, heap sort, bucket sort)
* Search
* Graphs
* Dynamic programming (optional)
* Text Processing (optional)

**Course Requirements**

Class attendance is required. Absence of more than 3 lectures

will result in immediate fail of the course.

# **Student Objectives**

At the end of the course, students should:

* Understand the basic data structures and algorithms
* Be able to analyse the complexities of algorithms
* Be able to select appropriate data structures and algorithms for applications at hand

# **Tentative Grading Procedures**

The overall grade for this course is based on your performance in Exercises, Quiz, and Final examination, with weights as given below.   Course component grading weight (it can be changed):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Component** | **Percentage** | **Schedule** | **Duration** |
| 1 | Exercises | 20% | Every week |  |
| 2 | Quiz | 20% | Week 8 | 60 mins |
| 3 | Final Examination | 60% | Week 15 | 90 mins |
|  | **Total** | **100%** |  |  |
|  |  |  |  |  |

# **Policy on cheating**

The instructor will put a great deal of effort into helping students to understand and to learn the material in the course. However, the instructor will not tolerate any form of cheating.

The following behaviour will be regarded as cheating (together with other acts that would normally be regarded as cheating in the broad sense of the term):

* Copying assignments
* Allowing another student to copy an assignment from you and present it as their own work
* Copying from another student during a test or exam
* Referring to notes, textbooks, etc. during a test or exam
* Talking during a test or an exam
* Not sitting at the pre-assigned seat during a test or exam
* Communicating with another student in any way during a test or exam
* Presenting another’s work as your own
* Any other behaviour which attempts unfairly to give you an advantage over other students in the grade-assessment process