



Tennessee
TECH

CSC1310: LAB 1

CONCEPTS

- Structures
- Header Files
- Pointers

CREATE A COURSE PROGRAM

This lab is a review of structures & pointers that you learned in CSC 1300.

You will be building a **structure** named **Course** that will hold information about a course at Tennessee Tech.

Then you will implement **functions** to **create** a course, **destroy** (delete) a course, and **print** a course.

Last, you will implement a driver that will use the Course structure and functions.

COURSE STRUCTURE

Build a **structure** to contain **Course** information . The structure tag should be **Course** and should be defined in **Course.h**

- Name (string)
- Location (string)
- Sections (pointer to an array of strings)
- Number of sections (integer)
- Number of credit hours (integer)

FUNCTIONS

Function prototypes should go in **Course.h** and function definitions should go in **Course.cpp**

CREATE COURSE FUNCTION

Purpose:

This is a function that will (dynamically) create a new **Course** structure variable and then enter the given data into the **Course** structure members. This function will also have to dynamically create the sections array containing the number of elements as there are sections of the course. Then the function will return the memory address of the **Course** structure variable from this function.

Function Prototype:

```
Course* createCourse(string, string, int, int);
```

Parameters:

- a string containing the name of the course
- a string containing the location of the course
- an integer containing how many sections the course has
- an integer containing how many credit hours the course has

Returns:

- a pointer to the **Course** variable just created with all the given data

DESTROYCOURSE FUNCTION

PURPOSE:

This is a function that will delete (release) both the dynamically created sections array and the course so that there are no memory leaks.

FUNCTION PROTOTYPE:

```
void destroyCourse(Course* myCourse) ;
```

PRINTCOURSE FUNCTION

PURPOSE:

This function will print all the data in the members of the sent **Course** structure variable, including all the sections of the course. The data must be printed in a neat easy-to-read format so that the program is user friendly.

FUNCTION PROTOTYPE:

```
void printCourse(Course* myCourse) ;
```

DRIVER

You are given most of the **Driver.cpp** code (called Driver_given_lab1.cpp and you will need to copy the contents and place in your Driver.cpp), but **you will need to add only FIVE LINES of code** in all the places indicated by the comments.

After you add the necessary code, you need to test all the code to make sure you get the same output as below!

The user input is highlighted in **yellow**.

```
How many courses are you taking this semester?
```

```
3
```

```
COURSE NAME:          CSC 1300
```

```
COURSE LOCATION:      CLEM 215
```

```
COURSE HOURS:         4
```

```
NUMBER OF SECTIONS?   3
```

```
SECTION 1:            001
```

```
SECTION 2:            002
```

```
SECTION 3:            003
```

```
*****
```

```
COURSE NAME:          CSC 1310
```

```
COURSE LOCATION:      FNDH 238
```

```
COURSE HOURS:         4
```

```
NUMBER OF SECTIONS?   2
```

```
SECTION 1:            001
```

```
SECTION 2:            002
```

```
*****
```

```
COURSE NAME:          CSC 2400
```

```
COURSE LOCATION:      BRUN 406
```

```
COURSE HOURS:         3
```

```
NUMBER OF SECTIONS?   3
```

```
SECTION 1:            001
```

SECTION 2: 002

SECTION 3: 003

The following are the courses you entered:

***** COURSE 1 *****

COURSE NAME: CSC 1300

COURSE LOCATION: CLEM 215

COURSE HOURS: 4

COURSE SECTIONS:

001

002

003

***** COURSE 2 *****

COURSE NAME: CSC 1310

COURSE LOCATION: FNDH 238

COURSE HOURS: 4

COURSE SECTIONS:

001

002

***** COURSE 3 *****

COURSE NAME: CSC 2400

COURSE LOCATION: BRUN 406

COURSE HOURS: 3

COURSE SECTIONS:

001

002

003

WHAT TO TURN IN

Zip all the following files and upload to ilearn.

- Driver.cpp
- Course.h
- Course.cpp