Basic Course Information:
Course Title: CS 215 – Introduction to Program Design, Abstraction and Problem Solving
Lecture: Kastle Hall, Room 213, Tue/Thu 9:30-10:45am (Secs 001-006)
Ralph G. Anderson (RGAN), Room 203, Wed 6:00-8:00pm (Sec 401)
Labs: Ralph G. Anderson (RGAN)

<table>
<thead>
<tr>
<th>Sec</th>
<th>Day/Time</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>Wed 8:15 - 9:45</td>
<td>103</td>
</tr>
<tr>
<td>002</td>
<td>Wed 10:20 - 11:50</td>
<td>103</td>
</tr>
<tr>
<td>003</td>
<td>Wed 12:00 - 1:30</td>
<td>103</td>
</tr>
<tr>
<td>004</td>
<td>Wed 2:00 - 3:30</td>
<td>103</td>
</tr>
<tr>
<td>005</td>
<td>Wed 4:00 - 5:30</td>
<td>103</td>
</tr>
<tr>
<td>006</td>
<td>Fri 10:20 - 11:50</td>
<td>103</td>
</tr>
<tr>
<td>401</td>
<td>Tue 6:00 - 8:00</td>
<td>211</td>
</tr>
</tbody>
</table>

Website: http://cs.uky.edu/~kwjoiner/cs215
Dates: August 27, 2019 – December 17, 2019

Instructor:
Name: Mr. Kevin Joiner
Email: kwjoiner@cs.uky.edu
Office: Davis Marksbury Building (DMB), Room 211, 329 Rose Street
Office Hours: http://cs.uky.edu/~kwjoiner/schedule.html

Bulletin Description:
The course covers introductory object-oriented problem solving, design, and programming engineering. Fundamental elements of data structures and algorithm design will be addressed. An equally balanced effort will be devoted to the three main threads in the course: concepts, programming language skills, and rudiments of object-oriented programming and software engineering. Prereq: EGR 102, CS 115, CS 221, or equivalent. (4 credit hours)

Course Objectives:
Students will learn basic data types, data structures and basic algorithm design and analysis techniques including recursion. Programming skills in an object-oriented programming language will be substantially improved with respect to CS-115. Students will also become familiar with basic software engineering methodology.
Students will become proficient in:
1. Object Oriented approach to programming.
2. Dynamic memory management.
3. Recursive programming techniques.
4. Data structures, such as linked lists, stacks, queues, and trees.
5. Language constructs not covered in CS-115, such as pointers, dynamic storage.
6. Language constructs that support data abstraction with an emphasis on object-oriented design rather than procedural design.
7. Language constructs that support algorithm design, such as recursive vs. iterative methods.
10. Testing and debugging skills.
Course Outcomes:
The following supplemental questions will be included on the Teaching Course Evaluations at the end of the semester:

1. I have the ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
2. I have the ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs.
3. I have the ability to solve programming problems using classes.
4. I have the ability to solve programming problems using dynamic data and pointers.
5. I have the ability to solve programming problems using recursion.
6. I understand the basic data structures (linked lists, stacks, queues, trees) and can use them in programs.
7. I understand the principles of sorting and searching.

Course Resources:
Required ZyBook:
- **URL:** [https://learn.zybooks.com](https://learn.zybooks.com)
- **Code:** UKYCS215JoinerFall2019
- **Fee:** $58.00
- **Help:** See the online Help/FAQ or email [support@zybooks.com](mailto:support@zybooks.com)

The ZyBook may be purchased at the checkout of the UK Bookstore in addition to online with a credit card at the URL given above.

Microsoft’s Visual Studio Integrated Development Environment for C++ will be used for all programming assignments. This software is available to students:
- On **lab machines** in the Engineering buildings and in some other campus labs.
- On **individual virtual machines** that students can access from their personal computers via the internet. Instructions will be provided on the course website.
- By downloading a free copy and installing on their personal computers. Instructions will be provided on the course website.

Students will be introduced to these options during the first lecture and lab.

The **Course Website** will be used to post important information such as notes, due dates, and specifications of assignments. [http://cs.uky.edu/~kwjoiner/cs215](http://cs.uky.edu/~kwjoiner/cs215)

**Canvas** will be used in conjunction with the Course Website to post information on the course. It will also be used by students to submit lab and project assignments for grading, and for recording and calculating grades (averages and letter grade). [https://myuk.uky.edu/irj/portal](https://myuk.uky.edu/irj/portal)

Student Evaluation:
Students will be evaluated based on their performance in the following six areas. The description for each area includes details on how assignments are submitted and details on what is considered cheating and plagiarism, which differs slightly for each area.
1. **Lecture Attendance**
   a. Attendance will be taken at each lecture by having the student sign an attendance sheet.
   b. Each day’s attendance is graded as a maximum possible of 10 points. The instructor reserves the right to deduct up to 5 points for students who are late to class, or cause some disturbance of the class.
   c. Attendance may not be “made up” except for an Excused Absence from the instructor. Email the instructor with your name, section, date of absence, and documentation of excuse. Excused absences will be recorded in Canvas as 9/10 on the date absent and 1/0 for excused absence.
   d. No attendance is taken on the Lecture Exam days, nor on the first day of lecture.
   e. Should the instructor not provide a signup sheet for a lecture, all students will receive 8/8 points for that day, regardless of whether or not they are present.
   f. **Attendance Average** = (points-earned / points-possible) * 100

2. **ZyBook Participation and Challenge Activities**
   a. Participation and Challenge activities are completed by the student online as part of the ZyBook.
   b. Grading/completion of activities is performed by the ZyBook.
   c. Records of individual student completion/grades will be extracted from the ZyBook and transferred to Canvas on the due dates listed on the course website.
   d. Not all sections of a chapter are required; those not required will be marked **optional** in the ZyBook.
   e. Activities completed after the due dates will not be accepted for grading purposes.

3. **Lab Assignments**
   a. These are C++ programming assignments given at the beginning of each lab period. Their purpose is “hands on learning” of topics covered in the course.
   b. Labs are intended to be completed and submitted during each lab period. However, students may take extra time outside of the lab period to complete a lab. Each lab will be due one week after it is given in the lab session. **No late submissions will be accepted without an Excused Absence.**
   c. **Labs are not considered “submitted” until the student has:**
      1. demonstrated his/her solution to the TA and
      2. electronically submitted the solution in Canvas.
      Students should demonstrate lab solutions during lab time, or may see their TA during the TA’s office hours. TAs will normally assign a grade at the end of the demonstration.
   d. **Cheating:** students may get help from the TA, other students in the course, or elsewhere. However, simply copying a solution, or major part of a solution, to a lab is cheating. Students are expected to be able to explain any and all of what they submit as a solution, even if they received significant help from others. TAs may question the student on their solution to determine if the student understands the solution being submitted.
   e. TAs will take attendance at each lab session. A student is not considered “present” for the lab unless the student signs the attendance sheet. Lab attendance has no direct effect on the student’s grade, but the lab attendance record may be used by the instructor when considering special requests from the student, to make a judgement on a “borderline” letter grade, or for reports requested by outside entities (ie. Financial Aid, Advisor, Coach, etc.)
   f. Each lab will be out of 100 points.
   g. Specifications and due dates are posted on the course web page.
   h. Lab Assignments may also include Canvas surveys and other short assignments, usually out of 10 points.
   i. **Lab Average** = (points-earned / points-possible) * 100
4. Projects
   a. These are C++ programming assignments larger in scope than labs, and are completed outside of lecture and lab time. They are intended to give the student experience designing solutions to more complex problems, and to demonstrate the student’s mastery of the material.
   b. There will be four projects distributed throughout the semester. Each will be graded out of 75-125 points. Projects will be submitted in Canvas; no demonstration to a TA is required unless requested by the TA or instructor.
   c. Projects will be graded using MS Visual Studio C++ as provided in the Course Resources listed above. Students may use other C++ compilers or IDEs to develop projects, but are responsible for ensuring work submitted compiles and executes in MS Visual Studio. Projects that do not compile in MS Visual Studio will normally not receive a passing grade.
   d. Cheating: projects should be completed by a student alone. Students may of course ask for help from the instructor and TA during office hours. Students may receive minimal help from other students and other sources; however, any such help must be documented in the project documentation. Such help should be limited to understanding the project description; solutions should be the work of the student alone. Violation of these rules is cheating.
   e. Late submissions are accepted up to 5 school days after the due date, but with a 10% per school day penalty. No submissions will be accepted after 5 school days past the due date. When a project is due on a Friday at midnight, submission on the following Saturday, Sunday or Monday is one day late (10% penalty).
   f. Lab Average = (points-earned / points-possible) * 100

5. Lab Exams
   a. These are C++ programming assignments that must be completed on lab machines during lab time.
   b. Students are not allowed to use any resource (websites, notes, books, cell phones, personal laptops, etc.) except those explicitly specified on the exam. Students are not allowed to communicate with other students or anyone other than the test proctor (TA).
   c. When complete, students will submit solutions via Canvas.
   d. Cheating includes using any resource not allowed for the exam, communicating with anyone except the proctor/TA, and looking at another student’s computer or materials.
   e. There will be two lab exams during the semester. Dates are listed on the course website.
   f. Each exam will be out of 100 points
   g. Students must coordinate make-up exams with the instructor with an Excused Absence.
   h. Lab Exam Average = (points-earned / points-possible) * 100

6. Lecture Exams
   a. These are closed note/book written tests given in the lecture classroom covering any topic from the course.
   b. Cheating: students should use only their pencils and the exam materials provided. Once the exam is passed out, students should not communicate with anyone else in any way (including looking on someone else’s work) except for the exam proctor. Use of any electronic devices, including calculators, is prohibited. Violation of these rules constitutes cheating.
   c. There will be two exams: a Midterm given during a usual class period, and a Final Exam given at the place and time specified by the University Registrar.
   d. Each test will be out of 100 points.
   e. Students must coordinate make-up exams with the instructor with an Excused Absence
   f. Lecture Exam Average = (points-earned / points-possible) * 100

Correcting a Grade: Students will have two weeks after a graded assignment or exam is returned to the class to question the grade they received and to correct any errors. All grades become permanent two weeks after the assignment is returned to the class.
Grade Calculation: Using the six averages described above, an Overall Percentage will be calculated with the following weights and rounded off to the nearest tenth of a point:

<table>
<thead>
<tr>
<th>Average</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture Exam Average</td>
<td>30%</td>
</tr>
<tr>
<td>Lab Exam Average</td>
<td>20%</td>
</tr>
<tr>
<td>Lab Average</td>
<td>15%</td>
</tr>
<tr>
<td>Project Average</td>
<td>25%</td>
</tr>
<tr>
<td>Attendance Average</td>
<td>5%</td>
</tr>
<tr>
<td>ZyBook Average</td>
<td>5%</td>
</tr>
</tbody>
</table>

The Letter Grade will be based on the Overall Percentage according to the following scale:

- A = 90.0 and above
- B = 80.0 to 89.9
- C = 70.0 to 79.9
- D = 60.0 to 69.9
- E = 59.9 and below.

At the end of the semester, the instructor reserves the right to lower, but never raise, the grading scale (example: A = 88.5 and above, but not A = 91.5 and above).

Excused Absences:

Attendance in lectures is required. Students need to notify the instructor of absences prior to class when possible. S.R. 5.2.4.2 defines the following as acceptable reasons for excused absences:

(a) serious illness
(b) illness or death of family member
(c) University-related trips
(d) major religious holidays
(e) other circumstances found to fit reasonable cause for nonattendance by the instructor.

Students are expected to withdraw from the class if more than 20 percent of the classes scheduled for the semester are missed (excused or unexcused) per university policy.

To obtain an excused absence, email the instructor an explanation along with any supporting documentation. This should be done well before the absence when possible.

Cheating and Plagiarism:

Per university policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the university may be imposed. Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website: [http://www.uky.edu/Ombud](http://www.uky.edu/Ombud). A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited. Part II of Student Rights and Responsibilities (available online [http://www.uky.edu/StudentAffairs/Code/part2.html](http://www.uky.edu/StudentAffairs/Code/part2.html)) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about the question of plagiarism involving their own work, they are obliged to consult their instructors on
the matter before submission. When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgement of the fact, the students are guilty of plagiarism. Plagiarism includes reproducing someone else’s work, whether it be a published article, chapter of a book, a paper from a friend or some file, or something similar to this. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be. Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone. When a student’s assignment involves research in outside sources of information, the student must carefully acknowledge exactly what, where and how he/she employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain (Section 6.3.1). Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

Special Accommodations for Disabilities:

If you have a documented disability that requires academic accommodations, please contact the instructor as soon as possible by email or during scheduled office hours. In order to receive accommodations in this course, you must provide the instructor with a Letter of Accommodation from the Disability Resource Center. Information on the center is found online at http://www.uky.edu/DisabilityResourceCenter/.

Syllabus Policy:

Students are responsible for learning and following all policies stated in this syllabus. No part of this syllabus may be changed after initial presentation on the first day of the class on 8/23/2018 unless approved by a unanimous vote of students enrolled. Exceptions include changes deemed necessary by university policy and any minor informational/grammatical corrections. Changes after 8/23/2018 will be noted in red and announced in class and on Canvas.