CSE 3100 Systems Programming – Fall 2018

Lecture:

Section 001: MoWe 3:35pm–4:25pm, UTEB 175
Section 011: MoWe 10:10am–11:00am, UTEB 175

Lab:

Section 001L: Fr. 8:00am–9:50am, ITE 134
Section 002L: Fr. 10:00am–11:50am, ITE 134
Section 003L: Fr. 12:15pm–2:05pm, ITE 134
Section 011L: Fr. 8:00am–9:50am, ITE 138
Section 012L: Fr. 10:00am–11:50am, ITE 138
Section 013L: Fr. 12:15pm–2:05pm, ITE 138

Instructors:

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Tu/We/Th 12pm-1pm
ITE 261

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ITE 365

Teaching Assistants:

Param Bidja
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James Steel
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Th 1:30pm-2:30pm
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Course Description:

Introduction to system-level programming with an emphasis on C programming, process management, and small scale concurrency with multi-threaded programming. Special attention will be devoted to proficiency with memory management and debugging facilities both in a sequential and parallel setting.

Required Texts:

- Al Kelley and Ira Pohl, *A Book on C*, 4th Edition, Addison-Wesley, ISBN-13: 978-0201183993.
- David R. Butenhof, *Programming with POSIX Threads*, 1st Edition, Addison-Wesley, ISBN-13: 978-0201633924.

Optional Texts:

- Brian W. Kernighan and Dennis M. Ritchie, *The C Programming Language*, 2nd Edition, Prentice Hall, ISBN-13: 978-0131103627.
- Daniel J. Barrett, *Linux Pocket Guide*, 2nd Edition, O'Reilly, ISBN-13: 978-1449316693.
- Thorsten Grötker, Ulrich Holtmann, Holger Keding, and Markus Wloka. *The Developer's Guide to Debugging*, 2nd Edition, CreateSpace, ISBN-13: 978-1470185527.

Grade breakdown:

Labs	5%
Take-Home Assignments	20%
Three Exams	25% each

The lowest take-home assignment score and lowest lab score will be dropped from the overall grade calculation.

Late policy:

Take-home assignments are due at midnight on the specified due date. Lab assignments are due in 24 hours after the corresponding lab starts. To ensure timely grading and feedback, late submissions will not be accepted.

Collaboration policy:

Unless otherwise specified, all lab and homework assignments must be completed individually. All programs and documents you hand-in must be your own work. You may discuss course related topics with others, but you must not share code or written solutions. Reasonable use of published materials (including web resources) is allowed, but all sources must be explicitly acknowledged in your submissions. Violations will be reviewed and sanctioned according to the University Policy on Academic Integrity. An example of unreasonable use is submitting copied solutions with minor changes like renaming variables. If you need additional clarifications regarding the collaboration policy, please contact the instructors.

HuskyCT & Piazza:

We have a combined HuskyCT site for all sections of CSE 3100; you can access it by logging in with your NetID and password at https://learn.uconn.edu. Please check this site regularly for grades.
We will be using Piazza, which you can access at https://piazza.com/uconn/fall2018/cse3100/home or through a link on HuskyCT, for class materials, assignments, discussions, changes in class schedule, and other class announcements. You are strongly encouraged to ask class-related questions and communicate with other students, the instructors, and the TAs via Piazza rather than via e-mail. Please observe basic etiquette by keeping your messages polite, concise, and on-topic. Before posting new messages do take a look at the postings that are already there–it is possible that your question has already been answered. Appropriate questions are general questions about the material and clarifications on the assignments. Keep in mind that the collaboration policy is in effect, and you must not post extensive code fragments in public messages. For questions that are specific to your work use direct messages to the instructors or the TAs.

Students with disabilities:

If you have a documented disability for which you are or may be requesting an accommodation, please contact the Center for Students with Disabilities or the University Program for College Students with Learning Disabilities by the end of the third week of the semester to better ensure that any accommodations you need can be implemented in a timely fashion.

Tentative Schedule

Week #	Dates	Lecture/Lab topics
1	Aug 27 & 29 Aug 31	Course overview; intro to C (ABC Ch2, K&R Ch1) Lab0: VM access, basic shell commands, `git`.
2	Sept. 5 Sept 7	Basic data types (ABC Ch2 & Ch3, K&R Ch2) Lab1: `make`
3	Sept. 10 & 12 Sept 14	Flow of control and functions (ABC Ch4 & Ch5, K&R Ch3 & Ch4) Lab2: `gdb`
4	Sept. 17 & 19 Sept 21	Arrays and pointers (ABC Ch6, K&R Ch5) Lab3: `valgrind`
5	Sept. 24 & 26 Sept 28	Structures and I/O (ABC Ch9 & Ch11, K&R Ch6 & Ch7) Lab4: profiling
6	Oct 1 & 3 Oct 5	Miscellaneous C topics Exam1
7	Oct. 8 & 10 Oct 12	Processes and pipes (ABC Ch12) Lab5: `fork()`
8	Oct. 15 & 17 Oct 19	Signals and intro to sockets (ABC Ch12, Beej's guide) Lab6: pipes
9	Oct. 22 & 24 Oct 26	Client-server communication using sockets (Beej's guide) Lab7: sockets
10	Oct 29 & 31 Nov 2	Sockets Selection (Beej's guide) Exam2
11	Nov. 5 & 7 Nov 9	Intro to threads, thread management (PPT Ch2) Lab8: threads management
12	Nov. 12 & 14 Nov 16	Thread synchronization: mutexes, spinlocks, and condition variables (PPT Ch3) Lab9: threads synchronization
13	Nov. 26 & 28 Nov 30	Thread synchronization: read-write locks, barriers, and semaphores (PPT Ch6 & Ch7) Lab10: debugging and profiling threads
14	Dec. 3 & 5 Dec 7	Threads local storage and cancellation, real-time scheduling (PPT Ch5) Exam3