UOIT
CHALLENGE INNOVATE CONNECT

Dr. Khalid A. Hafeez

Operating Systems
SOFE 3950U & CSCI 3020U
Course outline for Winter 2017

1. Course Details & Important Dates*

Course Type	Location	CRN #	Section	Date	Day	Time
Lecture	UL 09	74024 74168	01	Jan. 09, 2017 Apr. 07, 2017	Monday Friday	8:10 am - 9:30 am 5:10 pm - 6:30 pm

Course Type	Location	CRN #	Day	Time	Start Date
Tutorial	J127 J127	74027 - 74170 74171 - 74173	Tuesday Tuesday	11:10 am - 12:30 pm 8:10 am - 9:30 am	Jan. 09, 2017

Course Type	Group	Location	Day	Time	Dates
Lab (74025-74169)	A	UA1240	Monday	6:40 pm - 9:30 pm	9/1, 23/1, 6/2, 27/3. 13/3,27/3
Lab (74026-74172)	B	UA1240	Monday	6:40 pm - 9:30 pm	16/1, 30/1, 13/2, 6/3. 20/3, 3/4

* For other important dates go to: www.uoit.ca >Current Students >Important Dates

2. Prerequisites

For Engineering Students
ELEE 3450U - Microprocessors and Computer Architecture,
SOFE 3200U – Systems Programming.
For computer Science Students:
CSCI 2010 - PRINCIPLES OF COMPUTER SCIENCE
CSCI 2050 - COMPUTER ARCHITECTURE I

3. Professor Contact Information

Instructor Name	Office	Phone	Email
Dr. Khalid A. Hafeez	ENG 1023	(905) 721-8668 Ext. 3453	Blackboard email
Office Hours:	Monday	10:00-11:00am	

TA Name	Office	Office Hours	Email
Jonathan Gillet (Tutorials)	TBA	TBA	Blackboard email
Patrick Smuk (Labs)	TBA	TBA	Blackboard email

4. Course Overview

The organization and structure of modern operating systems and concurrent programming concepts. Context within which the operating system functions (hardware, other system programs, application programs, interactive users), internals and design issues, design trade-offs and decisions. Process description and control. Threads, SMP, microkernels. Concurrency: mutual exclusion and synchronization. Deadlocks and starvation. Memory management and virtual memory. Uniprocessor scheduling. Multiprocessor and real-time scheduling. I/O management and disk scheduling. File management. Introduction to distributed processing and client/ server computing, distributed process management. Security, performance, and protection.

5. Learning Outcomes

- At the end of this course the students will have sufficient knowledge to analyze different aspects of operating systems in terms of functionality, performance and robustness. They should also have the knowledge and expertise to design and implement complex data structures and functionality of simple tasks in an operating system.

6. Course Design

Three lecture hours, 1.5 hours tutorial per week, and three hours lab every other week for one semester.

7. Outline of Topics in the Course

Week of	Topic	Other Info.
Jan. 09	Introduction	
Jan. 16	Operating System Structures	
Jan. 23	Processes	
Jan. 30	Threads	
Feb. 06	Process Synchronization	
Feb. 13	Process Synchronization, Midterm (Feb. 13. UA1350)	
Feb. 20	Midterm Break	
Feb. 27	CPU Scheduling	
Mar. 06	Deadlocks	
Mar. 13	Main and Virtual Memory	
Mar. 20	File System Interface	
Mar. 27	File System Implementation	
Apr. 03	Review	

- This schedule may change based on the course progress.

8. Lab Schedule

Lab #	Lab	Group ID	Date
Lab 1	Introduction	A & B	
Lab 2	UNIX Shell	A & B	
Lab 3	Threads	A & B	
Lab 4	Scheduling	A & B	
Lab 5	Multithreading and Deadlocks	A & B	
Lab 6	Virtual Memory Manager	A & B	

9. Required Texts/Readings

- Operating System Concepts, 9th Edition. By: Silberschatz, Galvin, and Gagne, Publisher: Wiley. ISBN 978-1-118-06333-0.
- Course PowerPoint Presentations and Notes posted on Blackboard
- **Reference Books**
- Operating Systems Internals and Design Principles, 7th Edition, by William Stallings.
- Modern Operating Systems, 3rd Edition, by Andrew S. Tanenbaum.
- Kernel Projects for Linux, by Gary Nutt.
- Design of the UNIX Operating System, by Maurice J. Bach.

10. **In-class Participation:** The attendance is NOT mandatory but you are expected to participate in the classroom discussions. Answering and asking questions will be considered as positive participation and will be rewarded.

11. Course Evaluation:

Category	Mark
Quizzes and Assignments	10%
Tutorials and in-class participation	05%
Labs	15%
Midterm	25%
Final	45%

* Final course grades may be adjusted to conform to program or Faculty grade distribution profiles. Further information on grading can be found in Section 5 of the UOIT Academic Calendar.

12. Assignments, Labs, Quizzes, Project, Tests

Non‑negotiated Late Assignment

- An assignment that has been handed in late without prior agreement between the student and the professor to extend the time for the assignment to be handed in will be considered a non-negotiated late assignment and will be assigned a penalty of 25% from the original grade, for each late day, therefore after 4 days the assignment will be worth a zero grade.

Negotiated Late Assignment
- An assignment that has been handed in late in accordance with a mutually agreed deadline and penalty (if applicable) will be considered a negotiated late assignment and will be marked in accordance with the mutually agreed terms.

Notes to Remember
- If you must send an e-mail to the instructor or the TA, then send it via Blackboard. It is highly recommended though that if the students have any questions or concerns whatsoever, they should discuss them with the instructor or TA during his/her office hours, rather than sending him or her e-mails. Understanding a situation or solving a problem or providing advice is always more effective face-to-face.
- It is advised that students print the lecture notes from Blackboard before they come to the class, and then add their own understanding to the notes during the lectures.
- All assignments and tests must be written very legibly, if something cannot be read, then it cannot be marked.

Deferred Midterm Exams
- Please note the following:
  - Medical certificates MUST be sent DIRECTLY from the Doctor's Office or Hospital within 5 days by mail or preferably by fax to the Academic Advisor of FEAS (fax number 905-721-3370 attn: Academic Advisor).
  - A fee for the deferral must be paid by the student if the Medical certificate is valid and arrives on time.
  - Failure to comply with the above will result in an F for the mid-term and/or the final exam.
  - The deferred exam will be either written or oral at the discretion of the instructor.

13. Accessibility

Students with disabilities may request to be considered for formal academic accommodation in accordance with the Ontario Human Rights Code. Students seeking accommodation must make their requests through the Centre for Students with Disabilities in a timely manner, and provide relevant and recent documentation to verify the effect of their disability and to allow the University to determine appropriate accommodations.

Accommodation decisions will be made in accordance with the Ontario Human Rights Code. Accommodations will be consistent with and supportive of the essential requirements of courses and programs, and provided in a way that respects the dignity of students with disabilities and encourages integration and equality of opportunity. Reasonable academic accommodation may require instructors to exercise creativity and flexibility in responding to the needs of students with disabilities while maintaining academic integrity.

14. Academic Integrity

Students and faculty at UOIT share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness and mutual respect for the aim and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

Students are expected to be familiar with UOIT's regulations on Academic Conduct (Section 5.15 of the Academic Calendar) which sets out the kinds of actions that constitute academic misconduct, including plagiarism, copying or allowing one's own work to copied, use of unauthorized aids in examinations and tests, submitting work prepared in collaboration with another student when such collaboration has not been authorized, and other academic offences.

The regulations also describe the procedures for dealing with allegations, and the sanctions for any finding of academic misconduct, which can range from a written reprimand to permanent expulsion from the university. A lack of familiarity with UOIT's regulations on academic conduct does not constitute a defense against its application.

Further information about academic misconduct can be found in the Academic Integrity link on your laptop.

15. Turnitin (if applicable)

UOIT and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments are subject to submission for textual similarity review by Turnitin.com. Assignments submitted to Turnitin.com will be included as source documents in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents for five academic years. The instructor may require students to submit their assignments electronically to Turnitin.com or the instructor may submit questionable text on behalf of a student. The terms that apply to UOIT's use of the Turnitin.com service are described on the Turnitin.com website.

Students who do not wish to have their work submitted to Turnitin.com must inform their instructor at the time the work is assigned and provide with their assignment a signed Turnitin.com Assignment Cover sheet:

http://www.uoit.ca/assets/Academic~Integrity~Site/Forms/Assignment%20Cover%20sheet.pdf

Further information about Turnitin can be found on the Academic Integrity link on your laptop.

16. Final Examinations (if applicable)

Final examinations are held during the final examination period at the end of the semester and may take place in a different room and on a different day from the regularly scheduled class. Check the published Examination Schedule for a complete list of days and times.

Students are advised to obtain their Student ID Card well in advance of the examination period as they will not be able to write their examinations without it. Student ID cards can be obtained at the Campus ID Services, in G1004 in the Campus Recreation and Wellness Centre.

Students who are unable to write a final examination when scheduled due to religious publications may make arrangements to write a deferred examination. These students are required to submit a Request for Accommodation for Religious Obligations to the Faculty concerned as soon as possible and no later than three week prior to the first day of the final examination period.

Further information on final examinations can be found in Section 5.24 of the Academic Calendar.

17. Course Evaluations

Student evaluation of teaching is a highly valued and helpful mechanism for monitoring the quality of UOIT's programs and instructional effectiveness. To that end, course evaluations are administered by an external company in an online, anonymous process during the last few weeks of classes. Students are encouraged to participate actively in this process and will be notified of the dates via MyCampus.

18. **Sequence of Instructions**

The professor may alter the sequence of instructions, the depth of coverage of material, as well as the precise test dates. Students will be given advanced notice, via the Blackboard course web site announcement tool and the Blackboard calendar of specific assignment and test dates that apply. In-class tests/quizzes may be assigned without notice during any scheduled class time. Assigned tasks and tests will have to be completed during that period

19. **Academic Planning and General Information**

Please follow the link below to view our academic resources and calendar. This link will provide you with information pertaining to Grade point average (GPA), Academic Standing Requirements, Internship Programs, Graduation Information, etc.
http://www.uoit.ca/EN/main/11258/academic_resources.html