# San José State University College of Engineering, Department of Computer Engineering CMPE 283, Section 2, Virtualization Technologies Spring 2017

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| Instructor: | **Mike Larkin** |
| **Course**: | CMPE 283, Virtualization Technologies |
| Section: | 2 |
| Office Location: | **ENG 339** |
| Email: | Michael.Larkin@sjsu.edu |
| Office Hours: | After class or by appointment |
| Class Days/Time: | Tuesday 1800h-2045h |
| Classroom: | ENGR 339 |
| Prerequisites: | CMPE272 or instructor consent |
| Course Website: | <https://sjsu.instructure.com> |

## Course Description:

Virtualization concepts, components and infrastructure, hardware and software virtualization, virtual machine life cycle management, virtualization services, case studies on various open source and commercial virtualization products.

**Course Catalog Description:**

The objective of this course is to teach you how virtualization technologies work. Since virtualization as a concept is very broad, we will focus primarily on virtualization of systems (operating systems/hardware systems) and less on ancillary virtualization concepts like network and storage virtualization.

The course is composed of several parts, of roughly equal duration:

* Review of system architectures and operating system construction (x86)
* Virtualization core concepts and architecture layering
* System virtualization
* Other ancillary concepts (virtualization on other platforms)

The middle portion of the course will be very low-level. Different approaches to virtualization will be discussed, with benefits and drawbacks of each approach being detailed. You will learn how each of these architectures/approaches are designed (in detail), including analysis of code for each.

Upon successful completion of this course, students will be able to:

1. Demonstrate knowledge of different system-level virtualization technologies
2. Demonstrate knowledge of the technological limitations associated with virtual machines, and how some of these limitations can be addressed
3. Be able to design a well-performing virtualized environment, taking into consideration performance characteristics of different design choices

## Text Books/Readings:

Recommended reading materials and assignments to be posted weekly or as needed. There is no assigned textbook for this class.

## Classroom Protocol:

**This course consists of a single lecture per week. In-class activities including hands-on labs will be given to encourage attendance. You are encouraged to consult with me on your group project to make sure it is successful.**

## Dropping and Adding:

**Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. Information on add/drops is available at** [**http://info.sjsu.edu/web-dbgen/narr/soc-fall/rec-298.html**](http://info.sjsu.edu/web-dbgen/narr/soc-fall/rec-298.html)**. Information about late drop is available at** [**http://www.sjsu.edu/sac/advising/latedrops/policy/**](http://www.sjsu.edu/sac/advising/latedrops/policy/)**. Students should be aware of the current deadlines and penalties for adding and dropping classes.**

## Assignments and Grading Policy:

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in  [University Policy S12-3](http://www.sjsu.edu/senate/docs/S12-3.pdf) at http://www.sjsu.edu/senate/docs/S12-3.pdf.

Grade points are accumulated from several areas: Three pop quizzes (30 points total, **no make- up quizzes**), mid term exam (80 points), and the final exam (100 points). Final course grades will be available on or after the dates listed in the SJSU course catalog for grade availability.

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| **Points** | **Grade** |
| 210-195 | A |
| 194-189 | A- |
| 188-180 | B+ |
| 179-174 | B |
| 173-168 | B- |
| 167-159 | C+ |

Grades are not subject to a curve other than the table shown above.

**NOTE** that[University policy F69-24](http://www.sjsu.edu/senate/docs/F69-24.pdf)athttp://www.sjsu.edu/senate/docs/F69-24.pdf states that “Studentsshould attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.”

## Grading:

**The grading will be absolute.** Grade points are accumulated from several areas: Three pop quizzes (30 points total, **no make- up quizzes**), mid term exam (80 points), and the final exam (100 points).

## University, College, Department or Course Policies

### Academic integrity:

**Students should know that the University’s Academic Integrity Policy is available at** [**http://www.sa.sjsu.edu/download/judicial\_affairs/Academic\_Integrity\_Policy\_S07-2.pdf**](http://www.sa.sjsu.edu/download/judicial_affairs/Academic_Integrity_Policy_S07-2.pdf)**. Your own commitment to learning, as evidenced by your enrollment at San Jose State University and the University’s integrity policy, require you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The website for Student Conduct and Ethical Development is available at** [**http://www.sa.sjsu.edu/judicial\_affairs/index.html**](http://www.sa.sjsu.edu/judicial_affairs/index.html)**.**

**Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include in your assignment any material you have submitted, or plan to submit for another class, please note that SJSU’s Academic Policy F06-1 requires approval of instructors.**

### Campus Policy in Compliance with the American Disabilities Act

**If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the DRC (Disability Resource Center) to establish a record of their disability.**

### Course Policy on Plagiarism:

* **Copying online content without correct quote is treated as plagiarism in this class.**
* **Both the person who copies and the person who facilitates the copying will be prosecuted for academic dishonesty.**
* **A student or students involved in a cheating incident involving any non-exam instrument (homework, reports, projects, or class exercises) will receive an F on that instrument, and will be reported to the judicial affairs office. Whether the report will carry a recommendation for disciplinary action will be left to my judgment.**
* **A student or students involved in a cheating incident on any quick test, the midterm exam or the final exam will receive an F in the course, and will be reported to the judicial affairs office with a recommendation for disciplinary action.**

**Things (among many others) you may not do when working with other students (except for team work):**

* **The term “solution” mentioned below means anything (code, design document, description, etc.) you will submit for assignments and exams.**
* **Work on an assignment together, type in solutions (separately or together) and turn in separate copies.**
* **Each works on a part of an assignment and turn in separate copies after combining solutions.**
* **Give any part of your solution (through paper, board writing, email, web posting, reading loud, letting someone else look at your screen, etc.) to other students before the assignment deadline.**

**Things you may do when working with other students:**

* **Discuss with other students and leave the discussion with empty hands.**
* **Share assignment solutions after the assignment deadline in order to compare different techniques used for solving the problems.**

## Learning Assistance Resource Center :

**The Learning Assistance Resource Center (LARC) is located in Room 600 in the Student Services Center. It is designed to assist students in the development of their full academic potential and to motivate them to become self-directed learners. The center provides support services, such as skills assessment, individual or group tutorials, subject advising, learning assistance, summer academic preparation and basic skills development.** [**The LARC website is located at http:/www.sjsu.edu/larc/**](http://www.sjsu.edu/larc/)**.**

## SJSU Writing Center:

**The SJSU Writing Center is located in Room 126 in Clark Hall. It is staffed by professional instructors and upper-division or graduate-level writing specialists from each of the seven SJSU colleges. Our writing specialists have met a rigorous GPA requirement, and they are well trained to assist all students at all levels within all disciplines to become better writers.** [**The Writing Center website is located at http://www.sjsu.edu/writingcenter/about/staff/**](http://www.sjsu.edu/writingcenter/about/staff/)

## Peer Mentor Center:

**The Peer Mentor Center is located on the 1st floor of Clark Hall in the Academic Success Center. The Peer Mentor Center is staffed with Peer Mentors who excel in helping students manage university life, tackling problems that range from academic challenges to interpersonal struggles. On the road to graduation, Peer Mentors are navigators, offering “roadside assistance” to peers who feel a bit lost or simply need help mapping out the locations of campus resources. Peer Mentor services are free and available on a drop –in basis, no reservation required. The Peer Mentor Center website is located at** [**http://www.sjsu.edu/muse/peermentor/**](http://www.sjsu.edu/muse/peermentor/)**.**

**Please note that this schedule is subject to change.**

Course Schedule:

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| **Date (Tue)** | **Topic** |
| **1/31 Week1** | **Class overview and green sheet. History of Virtualization** |
| **2/7 Week2** | **No Class** |
| **2/14 Week3** | **System and machine architectures** |
| **2/21 Week4** | **System and machine architectures** |
| **2/28 Week5** | **System and machine architectures** |
| **3/7 Week6** | **System and machine architectures** |
| **3/14 Week7** | **Virtualization core concepts** |

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| **3/21 Midterm Exam Week8** | **6:00pm - 7:30pm** |
| **3/28 Week9** | **Spring Break – No Class** |
| **4/4 Week10** | **Virtualization core concepts** |
| **4/11 Week11** | **Virtualization core concepts** |
| **4/18 Week12** | **Virtualization extra concepts** |
| **4/25 Week13** | **Virtualization extra concepts** |
| **5/2 Week14** | **Virtualization extra concepts** |
| **5/9 Week15** | **Case Studies** |
| **5/16 Week16** | **Case Studies** |
| **5/23 Week17 Final Exam** | **5:15PM-7:30PM** |