

**San José State University**  
**Department of Philosophy**

**PHIL 009 – Mathematics and Logic for General Education**  
**Spring Semester 2016**

**Course and Contact Information**

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<b>Office Hours:</b>	Tuesdays, 3 – 5 PM
<b>Class Days/Time:</b>	Monday and Wednesday, 12 PM – 1 15 PM
<b>Classroom:</b>	BBC 125

**Faculty Web Page and MYSJSU Messaging**

All course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on the Canvas learning management system course website. You are responsible for regularly checking with the messaging system through MySJSU (or other communication system as indicated by the instructor) to learn of any updates.

**Course Description**

A survey of basic concepts and methods in logic, focusing on mathematical logic, and formal proof. Some emphasis will be placed on using these concepts in daily life and in coping with public issues.

GE Area: B4

Prerequisite: Intermediate Algebra; satisfaction of ELM requirement.

**Learning Outcomes and Course Goals**

**Course Learning Outcomes (CLO)**

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

1. After completing this course, you will:
2. Be able to distinguish different types of *informal* arguments, and common mistakes people make in them;
3. Be able to translate arguments from natural language into *formal notation* using the appropriate *logical connectives* and *quantifiers*;
4. Be proficient in the use of *truth-tables* to determine *validity* and to construct counter-examples;
5. Be proficient with the *lemmon-style natural deduction system* for *propositional logic*.

## Required Texts/Readings

### Textbook

Tomassi, Paul. *Logic*.  
Blackwell Publishing, Inc.  
ISBN: 0-415-16695-9

### Other Readings

<i>Philosophical Writing</i> (Basil Blackwell) Martinich, A.P. ISBN: 0-631-20281-1	<a href="http://plato.stanford.edu">http://plato.stanford.edu</a> The Stanford Online Encyclopedia of Philosophy
<a href="http://www.jimpryor.net/teaching/guidelines/writing.html">http://www.jimpryor.net/teaching/guidelines/writing.html</a> Guidelines on Writing a Philosophy Paper Pryor, Jim	<a href="https://prezi.com/z4h1_fwilbxj/a-sample-philosophy-paper/">https://prezi.com/z4h1_fwilbxj/a-sample-philosophy-paper/</a> <i>Sample Philosophy Paper, Annotated</i> Mendelovici, Angela
<i>Beginning Logic</i> (Nelson) Lemmon, E.J. ISBN: 0-915-14450-6	<i>Logic: An Introduction</i> (Routledge) Restall, Greg ISBN: 0-415-40068-6

## Course Requirements and Assignments

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>.

There are four parts to your assessment in this course: logic exercises, two logic class tests, the final exam, and class participation. The breakdown for your total grade in this course is as follows: logic exercises 30%, each logic class test 20%, final exam is 25%, and participation 5%.

Logic exercises are due *in class every Monday* during the logic portion of the course. They can be either type-written or hand-written, but if hand-written they must be done *legibly* (no points will be awarded for exercises I cannot read), and in blue or black ink. *You must write your full name on the top of each page* – I cannot give you points if I do not know the work is yours.

The class tests will cover material from the logic portion of the class. This may include informal logic, translations from natural language into the notation of formal logic, truth-tables, and natural deduction. Each test is cumulative up to that date in the course, and so the second test may cover topics already covered on the first.

The final exam will be cumulative for all material in the course. The problems may cover any area, including informal logic, translations, natural deduction, truth-tables, and translations with quantifiers. I will hold a review session in the week leading up to the exam during which time there will be an opportunity to ask questions and go over any material from the course which you may wish to.

NOTE that [University policy F69-24](http://www.sjsu.edu/senate/docs/F69-24.pdf) at <http://www.sjsu.edu/senate/docs/F69-24.pdf> states that “Students should 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 Policy

There are four parts to your assessment in this course: logic exercises, the two class tests, the final exam, and class participation. The breakdown for your total grade in this course is as follows: logic exercises 30%, each class test 20%, final exam 25%, and participation is 5%.

Logic exercises are due *in class every Monday* during the logic portion of the course. They can be either type-written or hand-written, but if hand-written they must be done *legibly* (no points will be awarded for exercises I cannot read), and in blue or black ink. *You must write your full name on the top of each page* – I cannot give you points if I do not know the work is yours.

The first class test will cover material from the first several weeks of the logic portion of the class. This may include informal logic, translations from natural language into the notation of formal logic, and truth-tables. The second test will cover more material, possibly including all the material covered in the first test as well as natural deduction.

The final exam will be cumulative for all material in the course. The problems may cover any area, including informal logic, translations, natural deduction, truth-tables, and translations with quantifiers. I will hold a review session in the week leading up to each class test and the exam, respectively, during which there will be an opportunity to ask questions and go over any material from the course.

Note that per university policy, “All students have the right, within a reasonable time, to know their academic scores, to review their grade-dependent work, and to be provided with explanations for the determination of their course grades.” See [University Policy F13-1](http://www.sjsu.edu/senate/docs/F13-1.pdf) at <http://www.sjsu.edu/senate/docs/F13-1.pdf> for more details. I will endeavor to keep the grade book on Canvas updated so you may keep track of your progress in the course easily.

## Classroom Protocol

- *All work is due when it's due.* Late submissions will be penalized by 2 points the first on the first late day, and 1 further point each day after. So, for example, if your essay would normally be an A, it would be reduced to a B by being one day late, and a B- for two days.
- *Attendance is required.* Missing more than two classes in a semester may result in a lowered grade. Please stay in touch if you have a medical issue, family emergency, or work responsibility that makes attendance impossible. You are responsible for completing the work whether you are in class or not. You are also responsible for finding out whether there were any changes to the assignments on the syllabus. Please ask a classmate for this information.
- You need to be in class on-time, ready to work
- Both cell phones and laptop computers should be off and out of sight. Texting (or engaging in other electronic communication) during class is inappropriate. If you choose to violate the no phone policy, you will be asked to leave class.

## University Policies

### General Expectations, Rights and Responsibilities of the Student

As members of the academic community, students accept both the rights and responsibilities incumbent upon all members of the institution. Students are encouraged to familiarize themselves with SJSU's policies and practices pertaining to the procedures to follow if and when questions or concerns about a class arises. See [University Policy S90–5](http://www.sjsu.edu/senate/docs/S90-5.pdf) at <http://www.sjsu.edu/senate/docs/S90-5.pdf>. More detailed information on a variety of related topics is available in the [SJSU catalog](http://info.sjsu.edu/web-dbgen/narr/catalog/rec-12234.12506.html), at <http://info.sjsu.edu/web-dbgen/narr/catalog/rec-12234.12506.html>. In general, it is recommended that students begin by seeking clarification or discussing concerns with their instructor. If such conversation is not possible, or if it does not serve to address the issue, it is recommended that the student contact the Department Chair as a next step.

### Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester's [Catalog Policies](http://info.sjsu.edu/static/catalog/policies.html) section at <http://info.sjsu.edu/static/catalog/policies.html>. Add/drop deadlines can be found on the current academic year calendars document on the [Academic Calendars webpage](http://www.sjsu.edu/provost/services/academic_calendars/) at [http://www.sjsu.edu/provost/services/academic\\_calendars/](http://www.sjsu.edu/provost/services/academic_calendars/). The [Late Drop Policy](http://www.sjsu.edu/aars/policies/latedrops/policy/) is available at <http://www.sjsu.edu/aars/policies/latedrops/policy/>. Students should be aware of the current deadlines and penalties for dropping classes.

Information about the latest changes and news is available at the [Advising Hub](http://www.sjsu.edu/advising/) at <http://www.sjsu.edu/advising/>.

### Consent for Recording of Class and Public Sharing of Instructor Material

[University Policy S12-7](http://www.sjsu.edu/senate/docs/S12-7.pdf), <http://www.sjsu.edu/senate/docs/S12-7.pdf>, requires students to obtain instructor's permission to record the course and the following items to be included in the syllabus:

- “Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor's permission to make audio or video recordings in this class. Such permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.”
  - Typically, I will grant permission to be recorded when asked, however, I ask that these recordings not be shared in *any way* with people outside the class.
  - In classes where active participation of students or guests may be on the recording, permission of those students or guests should be obtained as well.
- “Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent.”

### Academic integrity

Your commitment, as a student, to learning is evidenced by your enrollment at San Jose State University. The [University Academic Integrity Policy S07-2](http://www.sjsu.edu/senate/docs/S07-2.pdf) at <http://www.sjsu.edu/senate/docs/S07-2.pdf> requires 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 [Student Conduct and Ethical Development website](http://www.sjsu.edu/studentconduct/) is available at <http://www.sjsu.edu/studentconduct/>.

## **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](http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf) at [http://www.sjsu.edu/president/docs/directives/PD\\_1997-03.pdf](http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf) requires that students with disabilities requesting accommodations must register with the [Accessible Education Center](#) (AEC) at <http://www.sjsu.edu/aec> to establish a record of their disability.

## **Accommodation to Students' Religious Holidays**

San José State University shall provide accommodation on any graded class work or activities for students wishing to observe religious holidays when such observances require students to be absent from class. It is the responsibility of the student to inform the instructor, in writing, about such holidays before the add deadline at the start of each semester. If such holidays occur before the add deadline, the student must notify the instructor, in writing, at least three days before the date that he/she will be absent. It is the responsibility of the instructor to make every reasonable effort to honor the student request without penalty, and of the student to make up the work missed. See [University Policy S14-7](http://www.sjsu.edu/senate/docs/S14-7.pdf) at <http://www.sjsu.edu/senate/docs/S14-7.pdf>.

## **Student Technology Resources**

Computer labs for student use are available in the [Academic Success Center](http://www.sjsu.edu/at/asc/) at <http://www.sjsu.edu/at/asc/> located on the 1st floor of Clark Hall and in the Associated Students Lab on the 2nd floor of the Student Union. Additional computer labs may be available in your department/college. Computers are also available in the Martin Luther King Library. A wide variety of audio-visual equipment is available for student checkout from Media Services located in IRC 112. These items include DV and HD digital camcorders; digital still cameras; video, slide and overhead projectors; DVD, CD, and audiotape players; sound systems, wireless microphones, projection screens and monitors.

## **SJSU Peer Connections**

Peer Connections, a campus-wide resource for mentoring and tutoring, strives to inspire students to develop their potential as independent learners while they learn to successfully navigate through their university experience. You are encouraged to take advantage of their services which include course-content based tutoring, enhanced study and time management skills, more effective critical thinking strategies, decision making and problem-solving abilities, and campus resource referrals.

In addition to offering small group, individual, and drop-in tutoring for a number of undergraduate courses, consultation with mentors is available on a drop-in or by appointment basis. Workshops are offered on a wide variety of topics including preparing for the Writing Skills Test (WST), improving your learning and memory, alleviating procrastination, surviving your first semester at SJSU, and other related topics. A computer lab and study space are also available for student use in Room 600 of Student Services Center (SSC).

Peer Connections is located in three locations: SSC, Room 600 (10th Street Garage on the corner of 10<sup>th</sup> and San Fernando Street), at the 1st floor entrance of Clark Hall, and in the Living Learning Center (LLC) in Campus Village Housing Building B. Visit [Peer Connections website](http://peerconnections.sjsu.edu) at <http://peerconnections.sjsu.edu> for more information.

## **SJSU Writing Center**

The SJSU Writing Center is located in Clark Hall, Suite 126. All Writing Specialists have gone through a rigorous hiring process, and they are well trained to assist all students at all levels within all disciplines to

become better writers. In addition to one-on-one tutoring services, the Writing Center also offers workshops every semester on a variety of writing topics. To make an appointment or to refer to the numerous online resources offered through the Writing Center, visit the [Writing Center website](http://www.sjsu.edu/writingcenter) at <http://www.sjsu.edu/writingcenter>. For additional resources and updated information, follow the Writing Center on Twitter and become a fan of the SJSU Writing Center on Facebook. (Note: You need to have a QR Reader to scan this code.)



### **SJSU Counseling Services**

The SJSU Counseling Services is located on the corner of 7th Street and San Fernando Street, in Room 201, Administration Building. Professional psychologists, social workers, and counselors are available to provide consultations on issues of student mental health, campus climate or psychological and academic issues on an individual, couple, or group basis. To schedule an appointment or learn more information, visit [Counseling Services website](http://www.sjsu.edu/counseling) at <http://www.sjsu.edu/counseling>.

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## Course Schedule

Week	Date	Topics, Readings, Assignments
1	2/1/16	Arguments and Logic: What is an Argument?
1	2/3/16	Arguments and Logic: Syllogisms
2	2/8/16	Ways Arguments can go Wrong: Fallacies
2	2/10/16	Reasoning in Practical Contexts
3	2/15/16	Introducing Formal Logic: Arguments and Fallacies Read: ch. 1
3	2/17/16	Introducing Formal Logic: Arguments and Fallacies Read: ch. 1 Exercises: all chapter 1 exercises
4	2/22/16	Introduction to Formal Logic: Translations Read: sections I, II, and III of ch. 2
4	2/24/16	Introduction to Formal Logic: Translations Read: sections I, II, and III of ch. 2 Exercises: All of 2.1 and 2.2
5	2/29/16	Introduction to Formal Logic: Truth-tables Read: ch. 4
5	3/2/16	Introduction to Formal Logic: Truth-tables Read: ch. 4 Exercises: 4.1 (Questions 1 – 10 Only), 4.2 (Question 1 only), and 4.3(Questions 1 – 10 Only)
6	3/7/16	<b>Review Day</b>
6	3/9/16	<b>Class Test 1</b>
7	3/14/16	Introduction to Natural Deduction (&I, &E, $\rightarrow$ E) Read: sections IV through X of ch. 2
7	3/16/16	Introduction to Natural Deduction ( $\rightarrow$ I) Read: sections IV through X of ch. 2 <i>Exercises: All of 2.3 (question 2, numbers 1 – 5 only), 2.4 (question 1 only), and 2.5 (question 1, numbers 6 – 10 only)</i>
8	3/21/16	Natural Deduction (Continued) (MT, DNE) <i>Read: ch. 3, sections I – III</i>
8	3/23/16	Natural Deduction (Continued) ( $\vee$ I) Read: ch. 3, sections I – III Exercises: All of 3.1, 3.2 (questions 1, 3, 5, 7 only)
9	3/28/16	<b>No Class – Spring Break</b>
9	3/30/16	<b>No Class – Spring Break</b>
10	4/4/16	Natural Deduction ( $\vee$ E) Read: ch. 3, sections IV, V, and VI
10	4/6/16	Natural Deduction ( $\vee$ E)

<b>Week</b>	<b>Date</b>	<b>Topics, Readings, Assignments</b>
		Read: ch. 3, sections IV, V, and VI Exercises: 3.4 (question 2, numbers 1 – 4), and all of 3.5
11	4/11/16	<b>Review Day</b>
11	4/13/16	<b>Class Test 2</b>
12	4/18/16	Quantifiers and Predicate Logic Read: ch. 5
12	4/20/16	Quantifiers and Predicate Logic Continued Read: ch. 5 Exercises: All of 5.3
13	4/25/16	Quantifiers and Predicate Logic Continued Read: ch. 5
13	4/27/16	Quantifiers and Predicate Logic Continued Read: ch. 5 Exercises: All of 5.4
14	5/2/16	Semantic Trees for Quantified Logic Read: ch. 7
14	5/4/16	Semantic Trees for Quantified Logic Read: ch. 7 Exercises: All of 7.1
15	5/9/16	Looking Forward/Looking Back: Introducing the Philosophy of Logic Reading: TBA
15	5/11/16	Looking Forward/Looking Back: Introducing the Philosophy of Logic Reading: TBA
16	5/16/16	<b>Review Day</b>
<b>Final Exam</b>	<b>5/19/16</b>	<b>Location: BBC 125</b> <b>Time: 9:45 am – 12:00 pm</b>