**New Course Proposal**

Symbolic Logic

PHIL2202

Proposed by Laureen Park

Social Science Department

City Tech, CUNY

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New York City College of Technology, CUNY

CURRICULUM MODIFICATION PROPOSAL FORM

This form is used for all curriculum modification proposals. See the [Proposal Classification Chart](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/2013-10-09-Proposal_Classification_Chart.pdf) for information about what types of modifications are major or minor. Completed proposals should be emailed to the Curriculum Committee chair.

|  |  |
| --- | --- |
| **Title of Proposal** | Symbolic Logic |
| **Date** | 10/22/18 |
| **Major or Minor** | Major |
| **Proposer’s Name** | Laureen Park |
| **Department** | Social Science |
| **Date of Departmental Meeting in which proposal was approved** | November 1, 2018 |
| **Department Chair Name** | Peter Parides |
| **Department Chair Signature and Date** | signature.jpg10/23/18 |
| **Academic Dean Name** | Justin Vazquez-Poritz |
| **Academic Dean Signature and Date** | 1/27/19 |
| **Brief Description of Proposal**  (Describe the modifications contained within this proposal in a succinct summary. More detailed content will be provided in the proposal body. | The course covers fundamental elements of propositional and quantificational logic, including translating English to symbolic logic, constructing truth tables, and utilizing derivations and proofs. |
| **Brief Rationale for Proposal**  (Provide a concise summary of why this proposed change is important to the department. More detailed content will be provided in the proposal body). | The course will serve the new Data Analytics program in Economics that is currently being developed. It will also be developed as an Interdisciplinary course serving Baccalaureate students at the college. It is a foundational course in any Philosophy curriculum. |
| **Proposal History**  (Please provide history of this proposal: is this a resubmission? An updated version? This may most easily be expressed as a list). | This the first time this course is being proposed as a new course. |

New York City College of Technology, CUNY

NEW COURSE PROPOSAL FORM

This form is used for all new course proposals. Attach this to the [Curriculum Modification Proposal Form](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/2013-10-10-Curriculum_Modification_Proposal_Form.docx) and submit as one package as per instructions. Use one New Course Proposal Form for each new course.

|  |  |
| --- | --- |
| **Course Title** | Symbolic Logic |
| **Proposal Date** | October 22, 2018 |
| **Proposer’s Name** | Laureen Park |
| **Course Number** | PHIL2202 |
| **Course Credits, Hours** | 3 credits, 3 hours |
| **Course Pre / Co-Requisites** | MAT 1190 or higher |
| **Catalog Course Description** | The course covers fundamental elements of propositional and quantificational logic, including translating English to symbolic logic, constructing truth tables, and utilizing derivations and proofs. |
| **Brief Rationale**  Provide a concise summary of why this course is important to the department, school or college. | Symbolic Logic studies the underlying patterns of thought, proofs and argumentation. It can be used to analyze natural language in its basic operations, as well as assess arguments for validity and soundness. Propositional logic studies operations similar to what computer programmers call “Boolean”. Rules of implication and derivation are also introduced. Predicate logic introduces additional operations governing variables and constants. Logic uses a binary system of truth and falsehood to assess valid arguments and pathways much in the way computer programmers or electrical engineers use 1’s and 0’s. The course will be required in the new Data Analytics program in Economics. It will also be developed as an interdisciplinary course with interest from faculty from Math, CST, and CET (see email correspondences on page 20). As such, it will serve Baccalaureate students, and is especially suitable for students in applied math programs, as well as in Technology and Design programs. |
| **CUNY – Course Equivalencies**  Provide information about equivalent courses within CUNY, if any. | Graduate Center – PHIL 72000, Queens College – PHIL 109, Hunter College- PHIL 27500/MAT 27500, Lehman College – PHIL 230/LNG 266, Baruch College - PHIL 3010 |
| **Intent to Submit as Common Core**  If this course is intended to fulfill one of the requirements in the common core, then indicate which area. | Intent to submit for Scientific World. |
| **For Interdisciplinary Courses:**   * Date submitted to ID Committee for review * Date ID recommendation received   - Will all sections be offered as ID? Y/N | 11/17/18 |
| 2/14/19 |
| No |
| **Intent to Submit as a Writing Intensive Course** | N/A |

Please include all appropriate documentation as indicated in the NEW COURSE PROPOSAL Combine all information into a single document that is included in the Curriculum Modification Form.

**NEW COURSE PROPOSAL CHECK LIST**

Use this checklist to ensure that all required documentation has been included. You may wish to use this checklist as a table of contents within the new course proposal.

|  |  |
| --- | --- |
| **Completed NEW COURSE PROPOSAL FORM** |  |
| * Title, Number, Credits, Hours, Catalog course description | X |
| * Brief Rationale | X |
| * CUNY – Course Equivalencies | X |
| Completed [Library Resources and Information Literacy Form](https://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/curriculum_modification_library_form-rev3F16.doc) | X |
| **Course Outline**  Include within the outline the following. |  |
| Hours and Credits for Lecture and Labs  If hours exceed mandated Carnegie Hours, then rationale for this | 3 credits |
| Prerequisites/Co- requisites | X |
| Detailed Course Description | X |
| Course Specific Learning Outcome and Assessment Tables   * Discipline Specific * General Education Specific Learning Outcome and Assessment Tables | X |
| Example Weekly Course outline | X |
| Grade Policy and Procedure | X |
| Recommended Instructional Materials (Textbooks, lab supplies, etc) | X |
| Library resources and bibliography | X |
| **Course Need Assessment.**  Describe the need for this course. Include in your statement the following information. |  |
| Target Students who will take this course. Which programs or departments, and how many anticipated?  Documentation of student views (if applicable, e.g. non-required elective). | BS in Data Analytics, Applied math, Tech and Design AA and BS degrees. |
| Projected headcounts (fall/spring and day/evening) for each new or modified course. | 25 |
| If additional physical resources are required (new space, modifications, equipment), description of these requirements. If applicable, Memo or email from the VP for Finance and Administration with written comments regarding additional and/or new facilities, renovations or construction. | n/a |
| Where does this course overlap with other courses, both within and outside of the department? | pending |
| Does the Department currently have full time faculty qualified to teach this course? If not, then what plans are there to cover this? | yes |
| If needs assessment states that this course is required by an accrediting body, then provide documentation indicating that need. | n/a |
| **Course Design**  Describe how this course is designed. |  |
| Course Context (e.g. required, elective, capstone) | Required, elective |
| Course Structure: how the course will be offered (e.g. lecture, seminar, tutorial, fieldtrip)? | Lecture, max 25, one section |
| Anticipated pedagogical strategies and instructional design (e.g. Group Work, Case Study, Team Project, Lecture) | Tests, exams, group work, team project |
| How does this course support Programmatic Learning Outcomes? | See course outline |
| Is this course designed to be partially or fully online? If so, describe how this benefits students and/or program. | Not at present |
| **Additional Forms for Specific Course Categories** |  |
| [Interdisciplinary Form](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/Application-for-Interdisciplinary-Course-Designation.docx) (if applicable) | approved |
| Interdisciplinary Committee Recommendation (if applicable and if received)\*  \*Recommendation must be received before consideration by full Curriculum Committee | 2/14/19 |
| [Common Core (Liberal Arts) Intent to Submit](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/CommonCoreCourseSubmissionForm_4.2.12.doc) (if applicable) | pending |
| Writing Intensive Form if course is intended to be a WIC (under development) | n/a |
| If course originated as an experimental course, then results of evaluation plan as developed with director of assessment. | n/a |
| **(Additional materials for** [Curricular Experiments](http://www.300jaystreet.com/college-council/curriculum_proposals/curricular-experiments)) |  |
| Plan and process for evaluation developed in consultation with the director of assessment. (Contact Director of Assessment for more information). |  |
| Established Timeline for Curricular Experiment |  |

**CHANCELLOR’S REPORT FORM**

|  |  |
| --- | --- |
| **Department(s)** | Social Science |
| **Academic Level** | **[ X ] Regular  [   ] Compensatory  [   ] Developmental**  **[   ] Remedial** |
| **Subject Area** | Philosophy |
| **Course Prefix** | PHIL |
| **Course Number** | 2202 |
| **Course Title** | Symbolic Logic |
| **Catalog Description** | The course covers fundamental elements of propositional and quantificational logic, including translating English to symbolic logic, constructing truth tables, and utilizing derivations and proofs. |
| **Prerequisite** | MAT 1190 or higher |
| **Corequisite** | N/A |
| **Pre- or co-requisite** | N/A |
| **Credits** | 3 |
| **Contact Hours** | 3 class hours |
| **Liberal Arts** | **[ X ] Yes  [  ] No** |
| **Course Attribute (e.g. Writing Intensive, etc)** | Interdisciplinary |
| **Course Applicability** | **[ ] Major**  **[ ] Gen Ed Required [ ] Gen Ed - Flexible [ ] Gen Ed - College Option**  **[ ] English Composition [ ] World Cultures [ ] Speech**  **[ ] Mathematics [ ] US Experience in its Diversity [ ] Interdisciplinary**  **[ ] Science [ ] Creative Expression [ ] Advanced Liberal Arts**  **[ ] Individual and Society**  **[ X] Scientific World** |
| **Effective Term** | Spring 2020 |

**Rationale:** Symbolic Logic studies the underlying patterns of thought, proofs and argumentation. It can be used to analyze natural language in its basic operations, as well as assess arguments for validity and soundness. Propositional logic studies operations similar to what computer programmers call “Boolean”. Rules of implication and derivation are also introduced. Predicate logic introduces additional operations governing variables and constants. Logic uses a binary system of truth and falsehood to assess valid arguments and pathways much in the way computer programmers or electrical engineers use 1’s and 0’s. The course will be required in the new Data Analytics program in Economics. It will also be developed as an interdisciplinary course with interest from faculty from Math, CST, and CET (see email correspondences on page 20). As such, it will serve Baccalaureate students, and is especially suitable for students in applied math programs, as well as in Technology and Design programs.

**Course Need Assessment**

PHIL2202

Symbolic Logic

**Target Students**:

Target students include students in the future Data Analytics program in Economics in which this course will be required. As an Interdisciplinary course, it will also attract Baccalaureate students in the college and in particular students from the applied math programs (math education and mathematics and statistics), Engineering programs, as well as students in Computer Information services and support services program. If you take the total number of Baccalaureate students that completed degrees as of 2017 in these programs, the count was 443 students.\* Mathematics Prof. Jonas Reitz, who originally developed this course as an Interdisciplinary course with myself believed it to be ideally suited to applied Math majors. Given the limited offerings of Interdisciplinary courses in general, and those specifically addressing the technology fields, these facts lead me to believe that the course would be in demand in the Technology and Design programs as well.

It would also be available as an elective for other programs.

**Course Rationale:**

Symbolic Logic studies the underlying patterns of thought, proofs and argumentation. It can be used to analyze natural language in its basic operations, as well as assess arguments for validity and soundness. Propositional logic studies operations similar to what computer programmers call “Boolean”. Rules of implication and derivation are also introduced. Predicate logic introduces additional operations governing variables and constants. Logic uses a binary system of truth and falsehood to assess valid arguments and pathways much in the way computer programmers or electrical engineers use 1’s and 0’s. The course will be required in the new Data Analytics program in Economics. It will also be developed as an interdisciplinary course with interest from faculty from Math, CST, and CET (see email correspondences on page 20). As such, it will serve Baccalaureate students, and is especially suitable for students in applied math programs, as well as in Technology and Design programs.

\*From the Office of Assessment and Institutional Data at City Tech: https://nces.ed.gov/collegenavigator/?s=NY&zc=11201&zd=0&of=3&ct=1&ic=1&id=190655#programs

**Symbolic Logic Course Outline**

New York City College of Technology

Social Science Department

## COURSE CODE: PHIL2202

## TITLE: Symbolic Logic

## Number of class hours, lab hours if applicable, credits

3 credits, 3 hours

COURSE DESCRIPTION:

The course covers fundamental elements of propositional and quantificational logic, including translating English to symbolic logic, constructing truth tables, and utilizing derivations and proofs.

COURSE CO/PREREQUISITE (S):

MAT 1190 or higher

RECOMMENDED/TYPICAL/REQUIRED TEXTBOOK (S) and/or MATERIALS\*

Patrick J. Hurley, *A Concise Introduction to Logic*, 12th Edition (Belmont: Thomson Wadsworth Publishers, 2014).

SAMPLE SEQUENCE OF TOPICS AND TIME ALLOCATIONS\*

**Week 1** T**he Language of Logic**

* *Tasks to be completed for class:* Read chapter 1 in *A Concise Introduction to Logic*. Do the following exercises: Section 1.1: 6-14; section 1.2: part I - 2-17, part II – 4,5 and part III – all; section 1.3: part I: all; section 1.4: parts I-III – all.
* *Learning Objective:* Identify and understand what an argument is, including which are inductive and deductive arguments, as well as what makes arguments valid or invalid. Understand the purpose of learning a symbolic language.

**Week 2 Categorical Propositions, Immediate Inferences and Venn Diagrams**

* *Tasks to be completed for class:* Read sections 4.1, 4.2, and 4.3 in *A Concise Introduction to Logic*. Do the following exercises: section 4.1: all; section 4.2: 4-8; section 4.3: parts I and II – all.
* *Learning Objective:* Identify and understand what a categorical proposition and syllogism is, as well as how to assess the validity and invalidity of categorical syllogistic forms using the Venn diagram in the modern point of view.

**Week 3 Categorical Propositions, Immediate Inferences, and Operations**

* *Tasks to be completed for class:* Read sections 4.4, 4.5, and 4.6 in *A Concise Introduction to Logic*. Do the following exercises: section 4.4: parts I and II – all, part II: 1-6; section 4.5: part I – 3-8, parts II and III – 1-10.
* *Learning Objective:* Identify and understand the differences between the modern and traditional points of view, oppositional relationships between categorical syllogistic forms versus operations, and learn how to test for validity and invalidity in the traditional point of view using Venn diagrams.

**Test 1 – Categorical Syllogisms, Immediate Inferences, and Venn Diagrams**

**Week 4 Propositional Logic, Atomic Sentences, and Translation**

* *Tasks to be completed for class:* Read section 6.1 in *A Concise Introduction to Logic*. Do the following exercises: section 6.1: 10-27.
* *Learning Objective:* Learn to symbolize ordinary language into symbolic form. Identify, translate, and apply the five logical operators.

**Week 5 Truth Functions and Truth Tables**

* *Tasks to be completed for class:* Read section 6.2-6.4 in *A Concise Introduction to Logic*. Do the following exercises: section 6.2:: parts I and II. – 5-10, part III – 10-25; section 6.3:: part I – 6-12; part II - 3-9; section 6.4: part I – 1-5, part II – 5-15.
* *Learning Objective:* Learn how to construct a truth table for connectives and arguments.

**Presentations – Deductive, Inductive Reasoning and Falsifiability**

**Week 6 Truth Functions and Truth Tables**

* *Tasks to be completed for class:* Read section 6.5-6.6 in *A Concise Introduction to Logic*. Do the following exercises: section 6.5: part I 3-12, part II - 5-10; section 6.6: all.
* *Learning Objective:* Learn how to and understand the implications of truth functions for validity, invalidity, tautological arguments, logical equivalence, and contradiction.

**Test 2 – Atomic Sentences and Truth Tables**

**Week 7 Rules of Implication and Replacement**

* *Tasks to be completed for class:* Read section 7.1-7.2 in *A Concise Introduction to Logic* . Do the following exercises: section 7.1: parts I –III – 5-15; section 7.2: part I – 3-10, parts II and III 5-20.
* *Learning Objective:* Identify and understand the rules of implication and replacement.

**Paper due** (see “Scope of Assignments for details.)

**Week 8 Rules of Implication and Replacement**

* *Tasks to be completed for class:* Read section 7.3-7.5 in *A Concise Introduction to Logic* . Do the following exercises: section 7.3: parts I – II – 3-10, part III – 5-20; section 7.4: parts I and II – 3-10, part III – 5-20; section 7.5: part I – 3-10, part II – 2-5.
* *Learning Objective:* Identify and understand the rules of implication and replacement.

**Week 9 Indirect Proofs and Proving Tautologies**

* *Tasks to be completed for class:* Read section 7.6-7.7 in *A Concise Introduction to Logic* . Do the following exercises: section 7.6: part I – 5-15, part II - 2-5; section 7.7: all.
* *Learning Objective:* Understand indirect proofs and apply them to proving tautologies.

**Test 3 – Rules of Implication, Replacement, and Indirect Proofs**

**Week 10 Translating Ordinary Language into Predicate/Quantificational Logic**

* *Tasks to be completed for class:* Read section 8.1 in *A Concise Introduction to Logic*. Do the following exercises: 5-30.
* *Learning Objective:* Learn to translate ordinary sentences into quantifiers and predicate logical form. Understand how certain sentences fit universal, existential, and relational patterns, and what roles variables and constants play. Demonstrate the application of these rules in generalizing and instantiating constants.

**Week 11 Rules regarding Quantifiers: Generalizing, Instantiating, and Equivalence**

* *Tasks to be completed for class:* Read sections 8.2 in *A Concise Introduction to Logic*. Do the following exercises: section 8.2: part I – 5-15, part II – 3-8.
* *Learning Objective:* Understand the relationships between generalizing a statement and instantiating one, and which rules apply in governing universal and existential statements. Understand equivalence and identity of forms.

**Week 12 Rules regarding Quantifiers: Generalizing, Instantiating, and Equivalence**

* *Tasks to be completed for class:* Read sections 8.3 in *A Concise Introduction to Logic*. Do the following exercises: section 8.3: part I – 5-15, part II – 3-10.
* *Learning Objective:* Understand the relationships between generalizing a statement and instantiating one, and which rules apply in governing universal and existential statements. Understand equivalence and identity of forms.

**Test 4 – Translating and Applying Rules to Quantificational Logic**

**Week 13 Conditional and Indirect Proofs and Proving Invalidity**

* *Tasks to be completed for class:* Read sections 8.4-8.5 in *A Concise Introduction to Logic*. Do the following exercises: section 8.4: part I – 5-15, part II – 3-10; section 8.5: parts I and II- 3-10, part III – 2-5; section 8.6: part I – 5-20, part II – 5-15, part III – 3-10.
* *Learning Objective:* Adapt conditional and indirect proofs to predicate logic, and apply them in proving invalidity.

**Week 14 Rules regarding Relational Predicates and Identity**

* *Tasks to be completed for class:* Read sections 8.6-8.7 in *A Concise Introduction to Logic*. Do the following exercises: section 8.6: part I – 5-20, part II – 5-15, part III – 3-10; section 8.7: all.
* *Learning Objective:* Understand and translate relational and identity statements, as well as overlapping quantifiers. Learn the rules of inference in regards to identity statements.

**Group Presentations** (see “Scope of Assignments” for details.)

**Week 15 Final Exam**

* Demonstrate learning objectives, including course content and reading, writing, critical thinking, evaluative, and reflective competencies through an in-class exam.

### COURSE INTENDED LEARNING OUTCOMES/ASSESSMENT METHODS

|  |  |
| --- | --- |
| **LEARNING OUTCOMES** | ASSESSMENT METHODS |
| **1.**  Understand the major categories of logic, including categorical syllogisms, propositional logic, and predicate logic. | **1.**  Regular homework assignments will assess students’ ability to recognize logical systems. Class discussion and frequent tests will also be regularly administered to check student comprehension. |
| **2.**  Learn how to translate and interpret natural language sentences, its operators and elements into logical form. Understand the underlying patterns that various natural language sentences share. | **2.**  Regular homework assignments will assess students’ ability to translate and interpret natural language into logical form and to recognize the underlying patterns that logic makes bare. Two exams will further assess proficiency in these areas. |
| **3.**  Learn and apply analytical tools such as venn diagrams, truth tables, and proofs in evaluating the validity and invalidity of arguments. | **3.**  Regular homework assignments will assess students’ ability to apply analytical tools in evaluating the validity and invalidity of arguments. |
| **4.**  Learn the rules of derivation, instantiation, and universalization, and apply them in creatively solving problems. | **4.**  Regular homework assignments will assess students’ ability to learn and apply rules in solving logical problems. Tests will further assess the sophistication by which students can solve problems by creatively employing rules in combination with each other to resolve the problems. Exams will further assess how proficient students are in employing the correct rules. A group project is the culminating project in which each group masters its topic and teaches it to other peer groups. |

### GENRAL EDCUATION LEARNING OUTCOMES/ASSESSMENT METHODS

|  |  |
| --- | --- |
| **LEARNING OUTCOMES** | ASSESSMENT METHODS |
| 1. KNOWLEDGE:   Develop knowledge of logical concepts and rules in order to understand and recognize its relation to other fields. Logical concepts and rules lay out patterns that can be found in natural language, computer programming language, mathematical proofs, and other fields. Deepen knowledge of logical concepts and rules by employing, demonstrating, and creatively applying them in analyzing the validity and invalidity of arguments. In gaining knowledge of logical concepts, the student sets up a framework that can serve as a lifelong tool for thinking critically and examining arguments and truth-functional claims. | **1.** Class discussion and regular homework assignments assess student acquisition of logical concepts and rules, and how to employ them in assessing arguments for validity. Tests further evaluates students’ successful application of concepts and rules in more sophisticated problems, demonstrating deep knowledge of the rules. Exams and a group project assess the refinement and mastery of the knowledge and employment of logical concepts and rules. |
| 1. SKILLS:   Learn and acquire skills for inquiry, analysis, problem resolution, and effective communication. Logic distills patterns underlying thought and communication that helps students to formulate questions for inquiry and to understand and analyze solutions. It uses quantitative rules, derivations, and analysis to determine formal validity of arguments, but it also deciphers semantic content in translating natural and field-specific language into universal, logical forms. It requires creative and productive thinking in order to apply rules to novel problem sets, which can be solved in a variety of ways. | **2**. Class discussion and regular homework assignments assess student acquisition of the skills necessary for translating, analyzing, and employing logic to solve problems. Tests further evaluates students’ successful application of concepts and rules to more sophisticated problems, and to apply them creatively to novel problems. Exams and a group project assess the depth of student formulation of questions for inquiry, analysis, problem-solving, and the ability to communicate their facility of such skills through verbal and written communication. |
| 1. INTEGRATION:   Understand and navigate logical systems and how they correlate with other disciplinary systems. Employ natural and field-specific data in filling out the content and meaning of sentences, quantificational statements, and arguments. Logic is uniquely poised to integrate divergent areas of study as it examines the patterns that operate beneath natural and technical languages, as well as employ the binary T/F (0/1) method as also found in technical language. | **3.** Class discussion and regular homework assignments assess student understanding of logical systems and their correlation to other systems. Tests further evaluates students’ successful application of systems to natural and technical examples. Exams and a group project assess the level of integrative thinking. |
| 1. VALUES, ETHICS, AND RELATIONSHIPS:   Develop community and civic engagement through dialogue and cooperative work. Evaluate the truth-claims of ethical, political, and social issues employing logical tools. Build personal and academic integrity through abidance to the academic integrity policy, and working with peers with respect to diversity, taking responsibility, and consensus-building. | **4.** Class discussions are opportunities to assess the development of respectful and meaningful communication. Regular homework assesses student employment of logical tools to assess truth-claims of value statements and arguments. Tests and exams also assesses the development of logical tools in evaluating valuative claims and arguments. The group project assesses student development in the area taking responsibility, respecting student diversity, and the ability to build consensus. |

SCOPE OF ASSIGNMENTS and other course requirements\*

The scope of assignments include regular homework assignments, a paper, a group project which leads to a presentation, regular tests, and an exam. Students are asked to read passages from  *A Concise Introduction to Logic* and do corresponding exercises in the book. I check for completion of regular assignments by reviewing answers at the beginning of class, asking students to check each other’s work. I then collect them to see that the “checker” accurately corrected the partner’s work. I also ask students to demonstrate their work by writing out solutions to problems on the chalk board. A mid-term paper requires students to employ the concepts of deductive and inductive reasoning, and validity and invalidity to the scientific concept of *falsifiability*. Students will read an excerpt from Karl Popper’s *A Logic of Scientific Discovery*, and write a paper analyzing his critique of the inductive method, and the role observation plays in falsifying abstract hypotheses/theories. Students will also be presenting their findings by applying the concept of falsifiability in the field by setting a hypothesis and testing it through observation. The culminating final group project will consist of members working towards mastery of a given topic in symbolic logic in order to teach it to their peers. They will use powerpoint to create slides and make a visual and oral presentation in which they thoroughly cover their assigned topic. For example, one group may take ownership of teaching rules of implication by presenting the general principles that govern their application and by using specific problems to demonstration their applications. The goal is to provide a thorough review of topics for the final exam.

METHOD OF GRADING – elements and weight of factors determining the students’ grade\*

5% Class Participation

15% Homework

40% Tests (4 tests worth 10% each)

10% Paper

10% Group Project Presentation

20% Final Exam

ACADEMIC INTEGRITY POLICY STATEMENT

Students and all others who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and at New York City College of Technology and is punishable by penalties, including failing grades, suspension, and expulsion. The complete text of the College policy on Academic Integrity may be found in the catalog.

\*depending on department policy these may be uniform and required of all instructors of the course or there may be guidelines or samples from which instructors may select or adapt):

## Attached course outline written by: Laureen Park and Jonas Reitz Date: 2/16/15

## Reviewed/Revised by: Laureen Park Date: 11/5/18

*Bibliography*

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Mazur, Joseph. *Euclid in the rainforest : discovering the universal truth in logic and math*. New York: Plume, 2006.

Shapiro, Stewart, Ed. *The Oxford handbook of philosophy of mathematics and logic*. Oxford: Oxford University Press, 2007.

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Stillwell, John. *Roads to Infinity*. Boca Raton: CRC Press, Taylor and Francis Group, 2010.

Van Benthem, Johan and ter Meulen, Alice, editors. *Handbook of Logic and Language*. MIT Press: Cambridge, MA, 1997.

**Email Correspondence**

I include email correspondence from faculty outside my discipline to demonstrate the viability of this course as an Interdisciplinary course.

Jonas Reitz

Sat 10/20, 9:55 PM

Hi Laureen,

Thanks so much!  And I'm so glad to hear the symbolic logic course is proceeding - the outline looks great.  Yes, I'm happy to help out by guest lecturing - count me in!  And swapping lectures would be fun (I'm still using the slides you prepared for my course, by the way).

Best of luck - keep me posted on the progress,

Jonas

Benito Mendoza

Thu 11/1, 10:00

Dear Laureen,

It was nice to talk to you last week. I have taken a look at the outline of the Symbolic Logic course, it looks great. I really think that an Interdisciplinary course on this topic is of great value for our students in the Computer Engineering Program, and perhaps in other majors such as Electrical Engineering and Computer Systems.

I would be glad to be part of it and participate as a guest lecturer. I could perhaps talk about the use of boolean logic and binary systems in different technologies (pneumatics, optics, storage, etc.) and in particular work with some examples with combinational logic circuits. We could show simple applications that can be tested on a simulator. The free online simulators I have used provide logic gates and gadgets such as switches, push buttons, sound alarms, virtual fans, and lights. Thus, they could see the practical applications of boolean logic.

Please, keep me posted in the developing of this course.

Sincerely,

-Ben

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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Caner Koca

Wed 11/7, 1:06 PM

Hi Laureen,

It was nice to talk to you yesterday. I am very much willing to be a guest lecturer in this proposed course. You may invite me to as many lectures as you see fit.

Best regards,

Caner Koca

Assistant Professor of Mathematics

CUNY - New York City College of Technology

Candido Cabo

Tue 10/16, 4:45 PM

Hi Laureen,  
  
Yes, I am interested.  
  
I have a few questions: How do you envision the Computer Science contribution? Which would be the ID structure of the course (co-taught, guest lecturers)? Perhaps we can meet for me to further understand your plans and what would be our contribution?  
  
Which days/times are you available to meet?  
  
Best,  
  
...candido  
  
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