Thermal Physics

SECTION I: Course Overview

Course Code: PHY210CDG
Subject Area(s): Physics
Prerequisites: Calculus I, II, Mechanics, and Chemistry
Language of Instruction: English
Total Contact Hours: 45
Recommended Credits: 3

COURSE DESCRIPTION

Thermal Physics is a discipline to which the French have contributed considerably. Sadi Carnot is considered the founder of modern thermodynamics for his work on the maximum efficiency of heat engines. Charles Désormes was the first to describe and predict the specific heats of gasses. Nicolas Clément was the first to define as use the Calorie as a unit of heat; a unit that is still used today in the United States.

In this course you will cover material related principally to entropy and free energy. These unifying concepts are an important tool in the understanding of Science and Engineering systems. The content of this course will thus focus on: equilibrium, entropy, and energy; heat and temperature; ideal gases, equipartition, and molar heat capacity; Boltzman statistics; the laws of thermodynamics; reversible and irreversible systems; Hemholtz free energy; Gibbs free energy; chemical equilibrium between particles; adsorption of atoms and phase transitions; phases of systems; thermal equilibrium; and rates of equilibrium.

In addition to the cognitive and knowledge skills listed above students in this course will consider the contributions of the French in science, mathematics, technology, and engineering as well as explore practical applications of math and science to the field of engineering.

LEARNING OBJECTIVES

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

- Grasp the fundamental principles of thermodynamics, statistical mechanics, and kinetic theory by demonstrating the ability to simplify and model real systems and to explain, analyze, and predict a variety of natural phenomena.
- Apply advanced mathematical methods such as calculus, linear algebra, probability, and statistics to explain and predict the properties of thermal systems.

- Demonstrate communication skills by clearly explaining both in oral and written form the mathematical and physical concepts learned in this course.
- Gain an appreciation of the history of thermal physics and the knowledge to follow current research and literature in a variety of fields where thermal physics has a central role.

PREREQUISITES

Prior to enrollment, this course requires you to have completed Calculus I & II, Mechanics, and Chemistry.

SECTION II: Instructor & Course Details

INSTRUCTOR DETAILS

Name: TBA
Contact Information: TBA
Term: SEMESTER

ATTENDANCE POLICY

This class will meet twice weekly for 60 minutes each session for 15 weeks. All students are expected to arrive on time and prepared for the day's class session.

CEA enforces a mandatory attendance policy. You are therefore expected to attend all regularly scheduled class sessions, including any field trips, site visits, guest lectures, etc. that are assigned by the instructor. The table below shows the number of class sessions you may miss before receiving a grade penalty.

Allowed Absences - Fall/Spring Semester		
Courses Meeting X day(s) Per Week	**Allowed Absence(s)**	**Automatic Failing Grade at Xth absence**
Courses meeting 2 day(s) per week	2 Absence	8th Absence

For every additional absence beyond the allowed number, your final course grade will drop down to the subsequent letter grade (ex: A+ to A). As a student, you should understand that the grade penalties will apply if you are marked absent due to tardiness or leaving class early. In the table below, you will find the grade penalty associated with each excessive absence up to and including automatic course failure.

ATTENDANCE DOCKING PENALTIES								
Absence	**1st**	**2nd**	**3rd**	**4th**	**5th**	**6th**	**7th**	**8th**
Penalty	**No Penalty**	**No Penalty**	**0.5 Grade Docked**	**1 Grade Docked**	**1.5 Grades Docked**	**2 Grades Docked**	**2.5 Grades Docked**	**Automatic Failure**
HIGHEST POSSIBLE GRADE AFTER ATTENDANCE PENALTIES								
Grade	**A+**	**A+**	**A**	**A-**	**B+**	**B**	**B-**	**F**

Note: The instructor reserves the right to make changes or modification to this syllabus as needed

CEA does not distinguish between excused and unexcused absences. As such, no documentation is required for missing class. Similarly, excessive absences, and the grade penalty associated with each, will not be excused even if you are able to provide documentation that shows the absence was beyond your control. You should therefore only miss class when truly needed as illness or other unavoidable factors may force you to miss a class session later on in the term.

GRADING & ASSESSMENT

The instructor will assess your progress towards the above-listed learning objectives by using the forms of assessment below. Each of these assessments is weighted and will count towards your final grade. The following section (Assessment Overview) will provide further details for each.

Homework	**15%**
Quizzes	**15%**
Midterm Examination	**20%**
Final Examination	**40%**
Class Participation I	**5%**
Class Participation II	**5%**

The instructor will calculate your course grades using the CEA Grading Scale shown below. As a CEA student, you should understand that credit transfer decisions–including earned grades for courses taken abroad–are ultimately made by your home institution.

CEA GRADING SCALE			
Letter Grade	**Numerical Grade**	**Percentage Range**	**Quality Points**
A+	9.70 – 10.0	97.0 – 100%	4.00
A	9.40 – 9.69	94.0 – 96.9%	4.00
A-	9.00 – 9.39	90.0 – 93.9%	3.70
B+	8.70 – 8.99	87.0 – 89.9%	3.30
B	8.40 – 8.69	84.0 – 86.9%	3.00
B-	8.00 – 8.39	80.0 – 83.9%	2.70
C+	7.70 – 7.99	77.0 – 79.9%	2.30
C	7.40 – 7.69	74.0 – 76.9%	2.00
C-	7.00 – 7.39	70.0 – 73.9%	1.70
D	6.00 – 6.99	60.0 – 69.9%	1.00
F	0.00 – 5.99	0.00 – 59.9%	0.00
W	Withdrawal	N/A	0.00
INC	Incomplete	N/A	0.00

ASSESSMENT OVERVIEW

This section provides a brief description of each form of assessment listed above. Your course instructor will provide further details and instructions during class time.

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Class Participation I & II (10%): Student participation is mandatory for all courses taken at a CEA Study Center. The instructor will use the rubric below when determining your participation grade. All students should understand that attendance and punctuality are expected and will not count positively toward the participation grade.

CLASS PARTICIPATION GRADING RUBRIC	
Student Participation Level	**Grade**
You make major & original contributions that spark discussion, offering critical comments clearly based on readings, research, & theoretical course topics.	**A+** (10.0 – 9.70)
You make significant contributions that demonstrate insight as well as knowledge of required readings & independent research.	**A/A-** (9.69 – 9.00)
You participate voluntarily and make useful contributions that are usually based upon some reflection and familiarity with required readings.	**B+/B** (8.99 – 8.40)
You make voluntary but infrequent comments that generally reiterate the basic points of the required readings.	**B-/C+** (8.39 – 7.70)
You make limited comments only when prompted and do not initiate debate or show a clear awareness of the importance of the readings.	**C/C-** (7.69 – 7.00)
You very rarely make comments and resist engagement with the subject. You are not prepared for class and/or discussion of course readings.	**D** (6.99 – 6.00)
You make irrelevant and tangential comments disruptive to class discussion. You are consistently unprepared for class and/or discussion of the course readings.	**F** (5.99 – 0.00)

Homework (15%): Homework is assigned on average once a week, to be handed in one week later. Please write the homework question before showing, in complete steps, the solution and do not forget to consider any modifications to problem sets announced in class. The homework is due at the date scheduled independent of the schedule of lectures.

Quizzes (15%): Students will take a quiz on the concepts learned in class approximately once per week. There will be no quiz for the week of the Midterm Exam.

Midterm Examination (20%): A midterm exam will be given around the week of the 15th session.

Final Examination (40%): The comprehensive, final examination will take place near the end of the last week of classes.

REQUIRED READINGS

Reading assignments for this course will come from the required text(s) and/or the selected reading(s) listed below. All required readings–whether assigned from the text or assigned as a selected reading–must be completed according to the due date assigned by the course instructor.

I. **REQUIRED TEXT(S)**: You may purchase the required text(s) prior to departure or upon program arrival. The required text(s) are listed below:

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James Wolfe. Elements of Thermal Physics 6th edition. 2017.

RECOMMENDED READINGS

The recommended reading(s) and/or text(s) for this course are below. These recommended readings are not mandatory, but they will assist you with research and understanding course content.

D.V. Schroeder. An Introduction to Thermal Physics. 1999.
C. Kittel and H. Kroemer. Thermal Physics. 2nd edition. 1980.

The Feynman Lectures on Physics Volume I, http://www.feynmanlectures.caltech.edu
Statistical Physics, Thermodynamics and Kinetics, MIT Open Courseware online.

ADDITIONAL RESOURCES

In order to ensure your success abroad, CEA has provided the academic resources listed below. In addition to these resources, each CEA Study Center provides students with a physical library and study areas for group work. The Academic Affairs Office at each CEA Study Center also compiles a bank of detailed information regarding libraries, documentation centers, research institutes, and archival materials located in the host city.

- **UNH Online Library**: As a CEA student, you will be given access to the online library of CEA's School of Record, the University of New Haven (UNH). You can use this online library to access databases and additional resources while performing research abroad. You may access the UNH online library here or through your MyCEA Account. You must comply with UNH Policies regarding library usage.

- **CEAClassroom – Moodle**: CEA instructors use Moodle, an interactive virtual learning environment. This web-based platform provides you with constant and direct access to the course syllabus, daily schedule of class lectures and assignments, non-textbook required readings, and additional resources. Moodle includes the normal array of forums, up-loadable and downloadable databases, wikis, and related academic support designed for helping you achieve the learning objectives listed in this syllabus. The ceaClassroom website is located here: https://www.ceaClassroom.com/

  During the first week of class, CEA academic staff and/or faculty will provide you with your Moodle credentials. They will also help you navigate through the many functions and resources Moodle provides. While you may print a hard copy version of the syllabus, you should always check Moodle for the most up-to-date information regarding this course. The instructor will use Moodle to make announcements and updates to the course and/or syllabus. It is your responsibility to ensure that you have access to all Moodle materials and that you monitor Moodle on a daily basis in case there are any changes made to course assignments or scheduling.

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COURSE CALENDAR *Thermal Physics*			
SESSION	**TOPICS**	**ACTIVITY**	**READINGS & ASSIGNMENTS**
1	**Course Introduction:** Review Syllabus, Classroom Policies, Course Overview **Topics introduced:** Classical to Quantum Physics Systems of Many Particles Statistics & Entropy	Course Overview Lecture	**Math Review:** Derivatives, Integrals, logarithms, extrema of a function, power series, trigonometric identities, graphing **Exercises** 1-2 on Pg xxii
2	**Ch 1: Review of Mechanical Energy** Kinetic Energy & Work Finite-Sized Objects & Rotation Energy Internal Energy Potential Energy Vibrational Energy	Lecture **HW 1 Issued**	**Mechanics Review:** Spring-Mass-Damper systems, elastic/inelastic collisions, pulley systems, rotation systems **Exercises** 1-5 on Pgs 10-11
3	**Ch 2: Irreversibility & the Second Law of Thermodynamics** Thermal Energy Irreversibility in Many-Body Systems Entropy & the Approach to Equilibrium Entropy Maximization & the Calculus of Several Variables	Lecture **Quiz on Week 1 Concepts**	Feynman Lecture 6 – *Probability* Probability: Vanderbrei and Snell. *Let's Make a Deal Paradox*, 1994 *Additivity of entropy for two spin systems* (p. 53 from Kittel and Kroemer) **Exercises** 1-4 on Pgs 18 -20
4	**Ch 3: Kinetic Theory of the Ideal Gas** Common Gas Particles Pressure & Kinetic Energy Equipartition Theorem Equipartition Applied to a Solid	Lecture **HW 1 Due** **HW 2 Issued**	Feynman Lecture 1 – *Atoms in Motion* Feynman Lecture 39 – The Kinetic Theory of Gases Appendix I – *Vibrations in Molecules and Solids*
5	**Ch 3: Kinetic Theory of the Ideal Gas** The Ideal Gas Law & Absolute Zero Distribution of Energies in a Gas You've Done the Math – Let's see if it works	Lecture **Quiz on Week 2 Concepts**	**Quiz on Entropy, Temperature, Laws of Thermodynamics, Equipartition Theorem** *N atoms in a box* (p.74 from Kittel and Kroemer) **Exercises** 1-5 on Pgs 29-30

6	**Ch 4: Ideal-Gas Heat Engines** The First Law of Thermodynamics Quasi-static Processes & State Functions Isothermal & Adiabatic Processes-Reversibility	Lecture **HW 2 Due** **HW 3 Issued**	Feynman Lecture 44 – The Laws of Thermodynamics Isothermal & adiabatic processes Sudden Expansion of a Gas Appendix 2 – The Sterling Cycle pg. 197
7	**Ch 4: Ideal-Gas Heat Engines** Entropy of the Ideal Gas Converting Heat into Work Refrigerators & Heat Pumps	Lecture **Quiz on Week 3 Concepts**	Heat Engines, Refrigerators, Heat Pumps, Gasoline Engines, Thermal Pollution, Air conditioners, Electrolysis & fuel cells, geothermal energy **Exercises** 1-3 on Pgs 43-44
8	**Review & Examples:** Kinetic Theory of Ideal Gases The Laws of Thermodynamics	Lecture & Review **HW 3 Due** **HW 4 issued**	Review Problems
9	**Ch 5: Statistical Processes I: Two State System** Macrostates & Microstates Multiple Spins Diffusion of Particles Heat Conduction	Lecture **Quiz on Week 4 Concepts**	Brownian Motion, Probability revisted Appendix 3 – Statistical Tools pg. 201 **Exercises** 1-7 Pgs. 56-58
10	**Ch 6: Statistical Processes II: Entropy & the Second Law** The Meaning of Equilibrium Objects in Multiple Bins Application to a Gas of Particles Volume Exchange & Entropy	Lecture **HW 4 Due** **HW 5 Issued**	Appendix 5 – Exclusion Principle & Identical Particles pg. 209
11	**Ch 6: Statistical Processes II: Entropy & the Second Law** Indistinguishable Particles Maximum Entropy in Equilibrium Justification of Important Statistical Formulas	Lecture **Quiz on Week 5 Concepts**	*Zipper Problem, Partition Function* (from Kittel and Kroemer) Sterling's Approximation **Exercises** 1-4 pgs. 71-72
12	**Ch 7: Energy Exchange** Model System for Exchanging Energy Thermal Equilibrium & Absolute Temperature Equipartition Revisited Why Energy Flows from Hot to Cold Entropy of the Ideal Gas	Lecture **HW 5 Due** **HW 6 Issued**	*States of Positive and Negative Ionization, Heat capacity of photons and phonons* (from Kittel and Kroemer) **Exercises** 1-7 pgs. 84-86

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13	**Ch 8: Boltzman Statistics I: The Canonical Distribution** Concept of a Thermal Reservoir The Boltzmann Factor	Lecture **Quiz on Week 6 Concepts**	Appendix 6 – Debye Specific Heat of a Solid pg. 209
14	**Ch 8: Boltzman Statistics I: The Canonical Distribution** Paramagnetism Elasticity in Polymers Harmonic Oscillator	Lecture **HW 6 Due** **HW 7 Issued**	Appendix 7– Applying the Partition Function pg. 209 **Exercises** 1-4 pg. 98
15	**Review & Examples**	Review & Examples **HW 7 Due**	Review & Examples
16	**MIDTERM EXAMINATION** Kinetic Theory of Ideal Gases - The Laws of Thermodynamics - Statistical Processes		
17	**Ch 9: Boltzmann Statistics II: Distributions of Molecules & Photons** Applying the Boltzmann Factor Particle States in a Classical Gas Maxwell-Boltzmann Distribution	Lecture	Photons & Blackbody Radiation *Thermal Expansion near absolute zero* Appendix 4 – Table of Integrals Pg. 207
18	**Ch 9: Boltzmann Statistics II: Distributions of Molecules & Photons** Photons Thermal Radiation Global Warming Boltzmann Statistics in an Organic System	Lecture **HW 8 Issued**	Writing Exercise **Exercises** 1-3 pg. 110
19	**Ch 10: Work & Free Energy** Heat Flow & Entropy Ideal Heat Engines Free Energy & Available Work Free Energy Minimum in Equilibrium	Lecture **Quiz on Week 9 Concepts**	Heat Engines & Ch 4 D-F revisited
20	**Ch 10: Work & Free Energy** Principal of Minimum Free Energy Equipartition of Energy Paramagnetism – Free Energy Approach Defects in Solids	Lecture **HW 8 Due** **HW 9 Issued**	A note of Gibbs Free Energy **Exercises** 1-4 pg. 122

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21	**Ch 11: Equilibrium between Particles I** Free Energy & Chemical Potential Absolute Entropy of an Ideal Gas Chemical Potential of an Ideal Gas	Lecture **Quiz on Week 10 Concepts**	Appendix 8 – Absolute Entropy of an Ideal Gas Pg. 219
22	**Ch 11: Equilibrium between Particles I** Law of Atmospheres Physical Interpretations of Chemical Potential Chemical Work & Gas Engines	Lecture **HW 9 Due** **HW 10 Issued**	**Exercises** 1-5 pg. 133-134
23	**Ch 12: Equilibrium between Particles II** Ionization of Atoms Chemical Equilibrium in Gases Carrier Densities in a Semiconductor Law of Mass Action: Doped Semiconductors	Lecture **Quiz on Week 11 Concepts**	Appendix 9 – Entropy and Diatomic Molecules Pg. 223 **Exercises** 1-6 pg. 143-144
24	**Ch 13: Adsorption of Atoms** Adsorption of Atoms on a Solid Surface Oxygen in Myoglobin Why Gases Condense	Lecture **HW 10 Due** **HW 11 Issued**	How to apply these concepts in Research
25	**Ch 13: Phase Transitions** Vapor Pressure of a Solid Solid/Liquid/Gas Phase Transitions Model of Liquid-Gas Condensation	Lecture **Quiz on Week 12 Concepts**	Appendix 10 – Vapor Pressure of a Vibrating Solid pg. 227 **Exercises** 1-4 pg. 156
26	**Ch 14: Processes at Constant Pressure** Gibbs Free Energy Vapor Pressures of Liquids Chemical Reactions at Constant Pressure Classical view of Thermodynamic Parameters	Lecture **HW 11 Due** **HW 12 Issued**	**Exercises** 1-4 pg. 164
27	**Ch 15-17: Advanced Topics I** Summary of Thermodynamic Variables Particle Reservoirs Basic Vibrational Properties of Solid Matter	Lecture **Quiz on Week 13 Concepts**	Introduction to Thermal & Diffusive Equilibrium, Molecular Binding to Surface States, Acoustic Waves in Crystals, Phonons **Exercise** pgs. 172
28	**Ch 18-20: Advanced Topics II** Electronic Excitations in Condensed Matter Quantum Statistics Thermodynamics of Metals & Semiconductors	Lecture **HW 12 Due**	Excitons in semiconductors, thermodynamics of excitonic matter, Fermi Dirac Statistics, Bose-Einstein Statistics, Electronic Wave Functions for a Linear Array of Atoms, Energy Bands in a Semiconductor Crystal

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29	**Review & Examples**
30	**FINAL EXAMINATION**

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SECTION III: CEA Academic Policies

The policies listed in this section outline general expectations for CEA students. You should carefully review these policies to ensure success in your courses and during your time abroad. Furthermore, as a participant in the CEA program, you are expected to review and understand all CEA Student Policies, including the academic policies outlined below. CEA reserves the right to change, update, revise, or amend existing policies and/or procedures at any time.

CLASS & INSTRUCTOR POLICIES

PROFESSIONALISM & COMMUNICATION: As a student, you are expected to maintain a professional, respectful, and conscientious manner in the classroom with your instructors and fellow peers as well as in CEA Moodle classrooms. You are expected to take your academic work seriously and engage actively in your classes while abroad. Advance class preparation, completing your assignments on time, and showing a focused and respectful attitude are expected of all CEA students. Additionally, it is critical to your success abroad that you express effective interpersonal and cross-cultural communication. Demonstrating your effort to do the best work possible will be recognized whereas unconstructive comments, failure to make adequate academic progress, and lack of compliance with CEA Policies will not be tolerated.

ARRIVING LATE/DEPARTING EARLY FROM CLASS: Late arrivals and/or early departures from class may result in being marked absent as determined by your course instructor. You must comply with in-country, immigration regulations and CEA internal policies by maintaining full-time student status while abroad. Full-time student status for semester programs constitutes enrolling and regularly attending at least 12 US credit hours per week. Full-time student status for summer programs constitutes enrolling and regularly attending at least 3 US credit hours per week per summer term. Consequently, CEA will dismiss from all CEA courses, programs, activities, and housing any student who fails to maintain satisfactory academic progress or full-time student status.

SUBMITTING WORK: All formal written work you carry out in this course (research papers, projects, studies, etc.) must be submitted in the format your instructor stipulates. Your instructor may require you to hand your assignments in electronically and/or in a hard-copy format during class time. You should keep copies of your work until your academic records have been recorded at your home institution, which may take 3 – 12 months after the completion of your program. As a student, you are responsible for providing copies of your work in the event of grade appeals, credit transfer requirements, faculty requests, etc.

LATE HOMEWORK: Homework is due at the specified date and time stated by the course instructor. Late homework may not be accepted and/or points may be deducted. Typically homework submitted several days after the deadline, with no previous discuss with your instructor, will not be accepted. It is at the instructor's discretion to determine penalties for assignments submitted after the due date.

EXTRA CREDIT: Individual student requests for extra credit are not permitted. Extra credit for students who miss classes, quizzes, and/or exams is not available in any circumstance. Typically extra credit will not be awarded; however, in the special event your instructor determines extra credit is available for the class, it is up to his/her discretion on how and when to award opportunities for extra credit. Under no circumstance will extra credit exceed more than 5% of your overall course assessment.

COURSE SECTIONS: You must attend the class section you are enrolled in, and you may not switch sections after the add/drop period unless special permission is granted by the instructor in conjunctions with the onsite Academic Director. Any students who attend a section of a class for which they are not enrolled will not be able to stay for the lesson and will not be considered present unless they attend their assigned section that week.

MAKE-UP CLASSES: CEA reserves the right to schedule make-up classes in the event of an unforeseen or unavoidable schedule change. You are expected to attend any make-up classes, and you should understand that the standard attendance policy will still apply. Make-up classes may be scheduled outside of typical class hours as necessary.

MISSING EXAMINATIONS: Examinations will not be rescheduled. Pre-arranged travel or anticipated absence does not constitute an emergency, and requests for missing or rescheduling exams will not be granted.

ELECTRONIC DEVICES: Always check with your instructor about acceptable usage of electronic devices in class. Any students who create a disturbance or fail to pay attention in class due to electronic devices will receive a warning and must immediately put the device(s) away unless otherwise instructed by the instructor. Inappropriate usage of electronic devices or repeat warnings may lead to a deduction in participation grades and/or class dismissal. Any students asked to leave class will be counted absent for the day.

> **Cell Phones:** Use of a cell phones during class is impolite, inappropriate, and prohibited. All students are expected to show common courtesy to others in order to create a positive learning environment and eliminate distractions for everyone. Cell phones, tablets, watches, and other electronic devices are to be turned off or silenced (do not set to vibrate) and placed in your purse, backpack, briefcase, etc. during class. The same policy applies for any class sessions that may take place outside of the classroom, including guest lectures, academic excursions, site visits, AICAP activities, and so forth.
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> **Laptops:** Your instructor will determine whether laptops will be allowed in class. The use of a laptop may be limited to specific purposes including note taking as allowed by special needs/academic accommodations, and/or at the discretion of the instructor. The use of a laptop is prohibited during all tests and quizzes unless otherwise specified by your instructor. If you have any questions, regarding the use of laptops or cell phones, please inquire with your instructor onsite.

ACTIVE LEARNING ENVIRONMENT: As a student, you will have the opportunity to participate in a variety of experiential learning activities throughout the course. These activities may take place during regular class hours or they may occasionally be scheduled outside of class hours. Students should arrive well-prepared and on-time for these activities. Moreover, students are expected to be engaged and respectful as it is a privilege to be invited to these visits and meet with local experts. Disrespectful behavior will result in a warning and/or dismissal from the activity and may result in a grade deduction or absence for the class session.

CEA GENERAL ACADEMIC POLICIES

COURSE ENROLLMENT: It is your responsibility as a student to ensure that your course enrollment records are accurate for all enrolled courses throughout the semester. You should check your MyCEA Account at the beginning of the semester and at the end of course enrollment to ensure you are properly enrolled in all of your desired courses. If a course is missing or an additional course is present, you must resolve the issue with CEA onsite academic staff immediately.

ADD/DROP POLICIES: You may make adjustments to your course schedule during the designated Add/Drop period. Add/Drop periods will be opened according to the scheduling of the CEA Study Center you are attending. All Add/Drop periods will close at the end of the first week of classes for semester programs or on the second day of classes for summer programs. Some limitations may apply to use of the Add/Drop period depending on your offering and/or course enrollments. You are responsible for notifying your home institution of any schedule changes.

COURSE WITHDRAWAL: If you wish to withdraw from a course after the conclusion of the CEA Add/Drop period, you must do so by completing the *Change of Course Petition* form. You must also notify your instructor in writing of your intent to withdraw from the course. Course withdrawals filed after the end of the first week of classes until the Course Withdrawal Deadline will be reported as a "W" on your academic transcript. The

Withdrawal Deadline for a semester program is the Friday of the ninth week of classes. The Course Withdrawal Deadline for a summer program is at the end of the first week of classes. Course withdrawals may vary or not be available for special programs such as Early Start programs. Please see the Academic Calendar for specific course withdrawal dates for your session. After the Course Withdrawal Deadline, any student effectively withdrawing from a course by virtue of not attending will be given an "F" in accordance with the CEA Attendance Policy. You must remain academically eligible in all cases by complying with the minimum number of credits required to maintain full-time student status. No tuition or course fee refunds or adjustments will be made due to course withdrawals.

MONITORING GRADES & ATTENDANCE: You are responsible for monitoring your grades and attendance records throughout the course. Any questions or concerns should be discussed immediately with your instructor and/or onsite academic staff. Your grading and attendance records can be accessed via your MyCEA Account at any time throughout your program. You are responsible for adhering to the attendance policy as outlined earlier in this syllabus.

ACADEMIC INTEGRITY: CEA is an academic community based on the principles of honesty, trust, fairness, respect, and responsibility. Academic integrity is a core value which ensures respect for the academic reputation of CEA, its students, faculty, and staff. CEA expects that you will learn in an environment where you work independently in the pursuit of knowledge, conduct yourself in an honest and ethical manner, and respect the intellectual work of your peers and faculty. Students, faculty and staff have a responsibility to be familiar with the definitions contained in, and adhere to, the CEA Academic Integrity Policy. Violations of CEA's Academic Integrity Policy may result in serious consequences, including course failure and/or program dismissal. CEA reserves the right to share information of such violations with your home institution.

ACADEMIC & SPECIAL NEEDS ACCOMMODATIONS: CEA is supportive of students who require academic and/or special needs accommodation(s) while studying abroad. If you would like to request accommodations while abroad, you must notify CEA in advance and provide documentation no later than 2 weeks prior to the start of classes. Students requesting academic and/or special needs accommodation(s) must submit CEA's Academic & Special Needs Accommodation(s) form. CEA will review requests to determine whether accommodation(s) can be granted. The extent to which accommodations can be provided depends on the nature of the accommodation needed, the availability of accommodations in the host country, and the costs of available services. Late requests for accommodations are subject to review, and CEA may not be able to provide accommodations without sufficient notice. Retroactive requests for accommodations will not be considered. You can learn more about academic and special needs accommodations by reviewing the CEA Disability Policy.

RELIGIOUS HOLIDAYS: CEA is sensitive to, and supportive of, the fact that faculty, staff, and students constitute a rich mixture of religious and ethnic groups. CEA recognizes that many religious holidays merit and/or require absence from scheduled classes. CEA instructors will make reasonable accommodations for any students who must miss a class, exam, or other academic exercise because of a required religious observance. In order to request religious accommodations, you must complete the CEA Religious Observance Request form and submit the form to your instructor and/or CEA onsite academic staff. To be considered eligible for religious accommodations, you must submit this form by the end of the second week of classes for semester programs or by the end of the second day of classes for summer programs. Students participating in religious accommodations must submit any missed work in advance of the holiday and will be required to make up missed class time through alternate assignments to receive full credit for time out of class.

ACADEMIC ELIGIBILITY: You must remain academically eligible to participate in CEA classes. Factors determining eligibility are outlined in the CEA Student Policies and include: full-time student status, satisfactory academic progress, and complying with academic and attendance policies. Whether you plan to transfer course grades back to your home institution or not, CEA expects that you will complete all graded assessment categories for each course in which you are enrolled. Failure to complete course requirements will result in

grade penalties, and may lead to academic probation and/or program dismissal if you are unable to maintain satisfactory academic progress or full-time student status in your program.

EARLY PROGRAM DEPARTURE: CEA understands that occasionally unforeseen circumstances warrant a temporary leave of absence of a program withdrawal from your study abroad program. CEA is committed to working with students to ensure each case is carefully evaluated and all academic options within reason are considered. All students requesting a temporary leave of absence (not to exceed 2 weeks in a semester program, some exceptions apply), or those wishing to withdraw from their academic program for medical or other reasons, must complete the Leave of Absence and Withdrawal Form at the time of the request. Academic credit may/may not be available, depending upon the request. All requests are subject to review by CEA Academic Staff.

COURSE & INSTRUCTOR EVALUATIONS: You will have the opportunity to evaluate both the class and the instructor at the conclusion of the course. Your constructive participation in the evaluation process is important and appreciated.

TRANSCRIPTS: Academic transcripts for this course will be available approximately 90 days following your program's end date. Transcripts for all CEA Study Center courses will be provided by CEA's School of Record, the University of New Haven (UNH) of West Haven, Connecticut. For any questions regarding your academic transcript, please contact: Transcripts@ceaStudyAbroad.com

GRADE APPEALS: If you would like to appeal your earned grade for a CEA Study Center course, you may do so by completing the CEA Grade Appeal Application form and submitting it to Academics@ceaStudyAbroad.com. For students participating in semester programs, you must submit the request form within the 60-day period following your program end date. For students participating in yearlong programs, (for academic year students, the end of the semester in which the course was taken). Upon receiving course grades through the MyCEA Account, you may initiate the appeal process by filling out and submitting to Academics@ceastudyabroad.com and your onsite academic staff the CEA Grade Appeal Application Form.

The grade appeal must concern an end-of-semester form of assessment calculated after your program's end date. It is your responsibility to address all interim grading issues directly with your instructor(s) while onsite. The appeal procedure and the grade re-evaluation it requires do not guarantee a change in grade and could result in an increase, no change, or decrease in the final grade. Any change is subject to a ruling by the course instructor in consultation with the onsite Academic Director and must be based on the academic evidence provided by you. Please note that you may need to submit copies of your work and/or emails conversations with your instructor if you are disputing a grade. CEA recommends keeping records of your academic work and communication with instructors until your academic records have been recorded at your home institution which may take 3 – 12 months after program completion.

Upon receiving the results of the review and the decision of the instructor, CEA staff will inform you of the outcome of the appeal. Students who decide to submit a secondary appeal must submit a Grade Appeal Review Petition to the Department of Academic Affairs at academics@ceaStudyAbroad.com within 15 days of being informed of the initial appeal decision. Secondary appeals will be reviewed by CEA's Academic Review Board. All decisions from the Academic Review Board are final.

ALL CEA POLICIES: As a CEA student, you are expected to adhere to the policies outlined in this syllabus as well as all CEA policies located at http://www.ceastudyabroad.com/student-policy/cea-policies. If you are participating in a hybrid program with CEA, you are similarly expected to adhere to all policies at the foreign partner institution you attend. Regardless of programming option chosen, all students are expected to adhere to the policies of their home institutions while studying abroad with CEA.

Note: The instructor reserves the right to make changes or modification to this syllabus as needed