A. COURSE INFORMATION

Course number/section: PHYS-3333.301, 3 credits
Class meeting time: TR 11:00-12:15pm, CCH-249
 offered to TPC through TTVN
Course Website: https://wtclass.wtamu.edu/
http://faculty.tamucc.edu/jspirko/Thermo

B. INSTRUCTOR INFORMATION

Instructor: Dr. Jeffery Spirko, TAMUCC
Office location: NRC-1111 (inside NRC-1100 suite)
Office hours: Tue/Thu 1-3pm, Wed 11am-Noon
Live Calendar: http://faculty.tamucc.edu/jspirko/calendar.html
Telephone: 361-825-6020
E-mail: jeffery.spirko@tamucc.edu
Appointments: Email for appointments. Check calendar and suggest an open time.

C. COURSE DESCRIPTION

Catalog Course Description

Concept of temperature, equations of state; the first and the second law of thermodynamics; entropy; change of phase; the thermodynamics functions.

This course is offered through the Texas Physics Consortium (TPC). See their website (http://www.tarleton.edu/tpc/) for details.

D. PREREQUISITES AND COREQUISITES

Prerequisites
• PHYS-2426 – University Physics II

Corequisites
• MATH-2415 – Calculus III

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook(s)
• An Introduction to Thermal Physics, Daniel V. Schroeder (2000), ISBN 0201380277,

Optional Textbook(s) or Other References

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F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:

- Apply the underlying principles of physics learned in PHYS 2425/2426 to thermal physics.
- Apply the new concepts of thermal physics to solve quantitative and qualitative problems in thermodynamics and statistical mechanics.

TPC Learning Outcomes – This course contributes toward several learning outcomes that are part of the Joint BS in Physics:

- Use appropriate mathematical techniques in solving advanced physics problems. This is assessed through analytical problems in homework and on exams.
- Display critical thinking skills in applying knowledge to realistic problems and situations. This is assessed through semi-conceptual problems in homework and on exams.
- Demonstrate adequate core knowledge in physics topics: thermodynamics. This is assessed within the final exam and outside of this course in the Major Field Test.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

TTVN: Lectures will be held in a video classroom, with the instructor present at TAMUCC. Other TPC Universities will participate via live two-way video from their respective TTVN classrooms.

WTClass: All Class notes, homework assignments and videos will be posted using TPC’s WTClass management system. It is student’s responsibility to check the system prior to each class meeting, complete reading and homework assignment and submit the latter through WTClass prior to the deadline. All graded homework will be returned via WTClass.

Assignments: There will be homework assignments throughout the semester. Though study groups and helping each other is encouraged, each assignment must represent your own
work. Copying (or even paraphrasing) others’ work and claiming it as your own is plagiarism, regardless of free or open source copyright licenses.

**Project:** The project will require you to research an application of Thermal Physics and present your work for the class. More details will follow.

**Exams:** Written exams will test both numerical method abilities (using a calculator and paper) and programming abilities (with sample code to be amended by the student). Available materials (equation sheet?, book?) will be determined at least 1 week prior to each exam.

### H. MAJOR COURSE REQUIREMENTS AND GRADING

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<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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<tbody>
<tr>
<td>Exams</td>
<td>60%</td>
</tr>
<tr>
<td>Homework</td>
<td>25%</td>
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<tr>
<td>Presentations</td>
<td>15%</td>
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</tbody>
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### I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>DATE (BY DAY OR WEEK)</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
<th>ASSIGNMENTS</th>
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<tbody>
<tr>
<td></td>
<td>Temperature and Energy</td>
<td>1</td>
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<tr>
<td></td>
<td>Heat and Work</td>
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<td></td>
<td>2nd Law of Thermodynamics</td>
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<tr>
<td></td>
<td>Ideal gas, entropy</td>
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<td></td>
<td>Interactions &amp; Implications</td>
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<td>Engines and Refrigerators</td>
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<td></td>
<td>Free Energy</td>
<td>5</td>
<td></td>
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<td></td>
<td>Boltzmann Statistics</td>
<td>6</td>
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<td></td>
<td>Quantum Statistics</td>
<td>7</td>
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Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

### J. COURSE POLICIES

**Communication**

It is expected that you check your email daily. This is referring to whatever email

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account that WTClass is hooked to. WTAMU has instructions on how to set your smartphone to check email, and forwarding to your home institution email account is available (Contact the WTAMU IT Help Desk for assistance). I’ll assume that you have read announcements and content that I send by email or WTClass.

**Attendance/Tardiness**
Students are expected to be present for all scheduled classes. In case of missing the scheduled class, students are responsible for all material covered and/or assigned during that class period.

**Late Work and Make-up Exams**
Students need to contact the instructor in advance about missing assignment or exam AND need to provide a valid reason in writing and documentation for the absence to be considered an excused absence. Valid reasons for missing homework or exam are (1) health related, backed by a doctor's note, (2) family emergency which can be documented, (3) job interview with the letter of invitation for the interview, and (4) participation in a previously scheduled athletic, or university event or travel to a conference. In case of excused absence, missed homework and tests may be made up and will be handled on a case by case basis with prior notification required unless that’s impossible.

**Cell Phone/Laptop Use**
Do not distract your classmates.

**TTVN Etiquette**
Generally, keep your microphone muted to keep background noise from being sent to the entire class. Even worse, it can override the instructor’s audio. Unmute your microphone to talk to the instructor or to the class. Get to know the technical support people on your campus, and make sure your room is set to auto-mute if possible.

**Plagiarism**
You may not copy-and-paste anything without permission from the author. (A message about material being public domain, creative commons, or similar license constitutes permission.) If you do quote, paraphrase, or use knowledge from anywhere other than class, you must cite the source. Even **careless copying is defined as plagiarism** by TAMUCC University Procedure 13.02.99.C3.01 Academic Misconduct Cases, section 2.1.1 (http://academicaffairs.tamucc.edu/Rules_Procedures/).

**K. COLLEGE (Sci & Engr) AND UNIVERSITY (TAMUCC) POLICIES**
- **Academic Integrity (University)**
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic
misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

- **Classroom/Professional Behavior**
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University)**
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. **Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course.** Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar ([http://www.tamucc.edu/academics/calendar/](http://www.tamucc.edu/academics/calendar/)) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at
http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage at http://sci.tamucc.edu/students/GradeAppeal.html. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

  If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

  http://disabilityservices.tamucc.edu/

- **Statement of Academic Continuity**
  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

L. **OTHER INFORMATION**

- **Academic Advising**
  The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

**GENERAL DISCLAIMER**

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely
manner during regularly scheduled lecture periods.

**Changelog**
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