PHYS 532 – Solid State Physics
MTSE 632 – Solid State Science
Fall 2025 Syllabus

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Office Hours: Monday 2:00 – 3:00 PM; Thursday 3:00 – 4:00 PM
Class Location: Thomas Gosnell Hall (GOS) – 1305
Class Time: Tuesday/Thursday 5:00 – 6:15 PM

Course Overview: This course will offer basic understanding of the macroscopic properties of solids in a microscopic picture. This course is an introduction to the physics of the solid state including crystal structure, x-ray diffraction by crystals, crystal binding, elastic waves and lattice vibrations, thermal properties, mechanical properties, electronic properties, free electron model of solids, and band theory and its applications. In addition to the topic-specific learning outcomes, you will continue the development of your analytical skills.

Pre-requisite: This course is restricted to MSENG-MS Major students. Basic knowledge of quantum mechanics, thermodynamics, and statistical physics is essential.

Important Course Information: A critical component of this course derives from your active participation in class. Students who maintain good work ethic by attending all the classes, and completing the required homework are more likely to excel in this class. Overall, including the 2 hours and 30 minutes per week that you will spend in the classroom, you will need to spend at least 6-8 hours outside the classroom to do well in this class.

Course Textbooks: *Notes will be provided, but reading the course book is strongly encouraged.*

Required course textbook: **(1)** *Solid State Physics: An Introduction* by **Philip Hofmann**
Optional books: **(2)** *The Oxford Solid State Basics* by **Steven H. Simon**
(3) *Introduction to Solid State Physics* by **Charles Kittel**
(4) *Solid State Physics* by **N. W. Ashcroft** and **N. D. Mermin**

Homework: Practicing problems on your own outside of class allows you to further your understanding and learn to work independently to solve problems. There will be roughly **7–8 HW** assignments during the semester, which will be due every one to two weeks.

You are allowed late submissions to the homework, but there is a 10% deduction for each day past the due date. For example, if you submit work on the 4th day after it is due, you will have a 40% deduction.

Grading: In this course, there will be one midterm exam*, a final exam, and homework assignments. Each of these is detailed below. The final grades will be calculated as follows:

Final Exam (during exam week): **40%**
Midterm Exam: **30%**
Homework Average: **30%**

***** *I might add another midterm exam depending on how the class is performing.*

Final Letter Grades: I will use the +/- grading system. The following chart shows the final course percentage that will guarantee at least the letter grade shown. Finer-grained divisions in the A, B, and C ranges will only be determined after a careful analysis at the end of the semester. If the above final cutoffs change, they will only be lowered, not raised.

Minimum Percentage	**Letter Grade**
90.0	A-
80.0	B-
70.0	C-
60.0	D-

Services: https://www.rit.edu/tutoring-at-rit

Policies:

***Exam Policy*:** You are allowed one sheet of equations in the exams. In addition to this sheet, you are allowed a calculator. Graphing calculators may be used on exams, but any device with Wi-Fi capabilities will not be allowed (smart phones, tablets, etc.). I will provide further information on exams as the semester progresses.

Attendance Policy: Attendance rosters will be kept, mostly for my own records. However, regular attendance is encouraged as it does factor into your final course score.

In-Class Policy on Electronic Devices: No phones, tablets, computers, *etc.* are allowed to be out of your backpacks during **In-person** class. If I see any of these electronic devices out, you will be asked to put it away.

Email Policy: I will respond to email in a timely manner, so you can email me with questions concerning your performance in the course or to ask for an appointment.

Policy on Canceled Classes: In the case of university closure or instructor illness, this syllabus and the exam dates are subject to change.

Policy on Academic Honesty: In HWs, you can work with others toward understanding the problems. However, when you work on assignments cooperatively but turn them in individually, all written work must be expressed in your own words. If there is reasonable evidence of copying, it will be construed as an act of plagiarism and student involved will receive a failing grade on that assignment. Additionally, any act of academic dishonesty on Exams will receive failing grades.

GENERAL COURSE POLICIES

Academic Integrity Statement

As an institution of higher learning, RIT expects students to behave honestly and ethically at all times, especially when submitting work for evaluation in conjunction with any course or degree requirement. RIT Online encourages all students to become familiar with the RIT Honor Code and with RIT's Academic Integrity Policy.

Student Academic Integrity Policy: A breach of student academic integrity falls into three basic areas: cheating, duplicate submission and plagiarism

(1) Cheating: Cheating is any form of fraudulent or deceptive academic act, including falsification of data, possessing, providing, or using unapproved materials, sources, or tools for a project, exam, or body of work submitted for faculty evaluation.

(2) Duplicate Submission: Duplicate submission is the submitting of the same or similar work for credit in more than one course without prior approval of the instructors for those same courses.

(3) Plagiarism: Plagiarism is the representation of others' ideas as one's own without giving proper attribution to the original author or authors. Plagiarism occurs when a student copies direct phrases from a text (e.g. books, journals, and internet) and does not provide quotation marks or paraphrases or summarizes those ideas without giving credit to the author or authors. In all cases, if such information is not properly and accurately documented with appropriate credit given, then the student has committed plagiarism.

If you are caught cheating on any assignment or exam, appropriate academic disciplinary action will be taken to the fullest extent allowed by the University. Refer to your "Students Rights and Responsibilities" handbook for further guidance on the Academic Dishonesty policy at RIT. https://www.rit.edu/academicaffairs/policiesmanual/d080.

Statement on Reasonable Accommodations

RIT is committed to providing academic adjustments to students with disabilities. If you would like to request academic adjustments such as testing modifications due to a disability, please contact the Disability Services Office (DSO). Contact information for the DSO and information about how to request adjustments can be found at https://www.rit.edu/disabilityservices/. After you receive academic adjustment approval, it is imperative that you see me during office hours so that we can work out whatever arrangement is necessary.

Course Copyright Policy

All course materials students receive or to which students have online access are protected by copyright laws. Students may use course materials and make copies for their own use as needed, but unauthorized distribution and/or uploading of materials without the instructor's express permission is strictly prohibited. RIT Policy C03.2 Copyright Policy addresses this issue (https://www.rit.edu/academicaffairs/policiesmanual/c032). For example, uploading completed labs, homework, or other assignments to any study site constitutes a violation of this policy. Students who engage in the unauthorized distribution of copyrighted materials may be held in violation of the University's Code of Conduct, and/or liable under Federal and State laws.

Starfish

This course participates in the **RIT Starfish** academic alert system, which is designed to promote student success through communication between students, instructors, and advisors. I will send a whole-class status update to all students before the semester midpoint. When I am concerned about an individual student's academic performance, I may raise an academic alert to notify the student as well as their advisor(s). On the other hand, when a student is doing well, I may send a "kudos" message. If you receive an academic alert email, it is your responsibility to contact me as soon as possible to discuss the issue, its potential impact on your success in the course, and identify people and resources to help you move forward. For more information about the Starfish system, visit http://www.rit.edu/starfish.

Statement on Title IX

Title IX violations are taken very seriously at RIT. RIT is committed to investigate complaints of sexual discrimination, sexual harassment, sexual assault and other sexual misconduct to ensure that appropriate action is taken to stop the behavior, prevent its recurrence, and remedy its effects. Please view the Title IX Rights and Resources at RIT; you can find additional syllabus language that you can modify as need on its Syllabus Language subpage.