

# Course Change Request

## New Course Proposal

Date Submitted: 10/01/20 10:59 am

Viewing: **CHEM 471 : Solid State Chemistry**

Last edit: 10/01/20 10:59 am

Changes proposed by: msikowit

Programs  
referencing this  
course

[SC-BS-CHEM: Chemistry, BS](#)

Are you completing this form on someone else's behalf?

Yes

Requestor:

Name	Extension	Email
Gerald Weatherspoon	3-1456	grobert1@gmu.edu

Effective Term: Spring 2021

Subject Code: CHEM - Chemistry

Course Number: 471

Bundled Courses:

Is this course replacing another course? No

Equivalent Courses:

Catalog Title: Solid State Chemistry

Banner Title: Solid State Chemistry

Will section titles  
vary by semester? No

Credits:

### In Workflow

1. CHEM Chair
2. SC Curriculum Committee
3. SC Associate Dean
4. Assoc Provost- Undergraduate
5. Registrar-Courses
6. Banner

### Approval Path

1. 10/01/20 3:37 pm  
Gerald Weatherspoon (grobert1):  
Approved for CHEM Chair

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**Schedule Type:** Lecture**Hours of Lecture or Seminar per week:** 3**Repeatable:** May be only taken once for credit, limited to 3 attempts (N3) **Max Allowable Credits:** 9**Default Grade Mode:** Undergraduate Regular**Recommended Prerequisite(s):****Recommended Corequisite(s):****Required Prerequisite(s) / Corequisite(s) (Updates only):**

CHEM 441 with minimum C

**Registrar's Office Use Only - Required Prerequisite(s)/Corequisite(s):**

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?

**Registration Restrictions (Updates only):****Registrar's Office Use Only - Registration Restrictions:****Field(s) of Study:****Class(es):****Level(s):****Degree(s):****School(s):****Catalog Description:**

Focuses on the design and synthesis, structure and bonding of solid state compounds; physical properties and characterization of solids. Topics of current interest will also be included.

**Justification:**

It is an elective students will utilize across the major, especially in the new Materials concentration. This course will be crosslisted with CHEM 641- Solid State Chemistry. Undergraduates have enrolled in CHEM 641 the past few times it has been offered and the demand is expected to continue to grow with the Materials concentration. Undergraduates will differentiate from graduates by choosing to research a current paper/topic instead of an original proposal.

**Does this course cover material which crosses into another department?** No

**Learning Outcomes:**

1. Describe trends in the periodic table.
2. Develop synthetic strategies to obtain new and novel mixed transition oxide materials
3. Explain magnetic behavior of transition metal/inorganic solid compounds.
4. Understand bonding and spectroscopy, solids and structural features, and common techniques used for analytical and characterization of inorganic materials.

**Attach Syllabus**

[CHEM 471 draft Oct1.pdf](#)

**Additional Attachments****Staffing:**

Weatherspoon, Tan

**Relationship to Existing Programs:**

Possible elective for all BS/BA Chemistry majors

**Relationship to Existing Courses:**

crosslist with CHEM 641

**Additional Comments:****Reviewer Comments**

**George Mason University**  
**Department of Chemistry and Biochemistry**  
**CHEM 471: Solid State Chemistry**

Instructor:	Dr. Gerald Weatherspoon	Day:	TR
Office:	Planetary 303	Time:	4:30 – 5:45 pm
Phone:	703-993-XXXX	Building:	TBA
Email:	<a href="mailto:grobert1@gmu.edu">grobert1@gmu.edu</a>	Room:	TBA
Office hours:	TBA		

The text for this course will be Solid State Chemistry and its Applications: 2nd edition/Student Edition, by Anthony R. West.

Supplementary reference materials can be found at the Johnson Center Library and Fenwick Library.

**Prerequisites:** CHEM 441 with a C or higher

### **Course Description**

The course will consist of lectures, ungraded problem sets, in-class presentation, a research paper, current literature reviews, a midterm examination and a final examination. Some of the tentative topics to be covered are: trends in the periodic table, synthetic routes to solid state materials, characterization techniques, electrical, magnetic and optical properties of materials.

Focuses on the design and synthesis, structure and bonding of solid state compounds;

### **Learning Outcomes**

1. Describe trends in the periodic table.
2. Develop synthetic strategies to obtain new and novel mixed transition oxide materials
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4. Understand bonding and spectroscopy, solids and structural features, and common techniques used for analytical and characterization of inorganic materials.

## Assessment

Research paper	100 points
Midterm Exam	100 points
Synthesis & Characterization	50 points
Final Exam	150 points

## Grading Policy

The final grade in this course will be based on a percentage of points earned relative to total possible points. Listed above is the point distribution for examinations, quizzes and the final examination. However, an absolute grading scale cannot be determined until all scores have been compiled and evaluated. In order to optimize your overall performance use the following scale as a rule of thumb: 100-90% (A); 89-80% (B); 79-70% (C); <69% (D or F).

The final grade in this course will only be changed in the case of a grading error. Only the instructor of record is authorized to change the grade. Any grading concerns should be discussed directly with the instructor of record.

Final grades will not be adjusted because late homework assignments are finally turned in. Any work submitted on the day of the final exam or afterwards will not be considered in the calculation of the grade.

It is your responsibility to make sure that grades posted in Blackboard accurately reflect the graded material that has been returned to you. Do not wait until the end of the semester to address these matters. Material presented in this manner will not be considered in calculation of the final grade.

**Academic Integrity Policies:** All students enrolled in the course are expected to abide by the honor code. The instructor reserves the right to award a grade of zero for any plagiarized work. This includes any work that is not your own, i.e., it has been copied from the internet or another classmate or used during the previous time that you took the course. Work that has been copied cannot be submitted for credit. In other words, copying another person's report/paper/presentation/proposal will result in you being

reported to the Office of Academic Integrity for an honor code violation. It is your responsibility to be familiar with the GMU Honor Code and have a working knowledge of activities that are considered honor code violations: <http://oai.gmu.edu/honor-code/>

First time offenders will receive a grade of ZERO for the exam/paper.

Second time/repeat offenders will receive a grade of "F" for the course. (If a student has previously been reprimanded for honor code violations in other courses at the university, the recommendation will be for a grade of "F" for the course as well as expulsion from the university.)

### Schedule of Classes

<i>Lect. #</i>	<i>Subject (textbook is primary reference; supplemental sources also used for topics being discussed)</i>
1/2	Introduction/ Review of Inorganic Chemistry concepts and theories
3/4	Synthetic Routes
5/6	Bonding in Solids
7/8/9/10	Crystal structure and systems Crystallography and Diffraction Techniques Lab Lecture and Lab
11/12/13/14	Crystal Structure (Space Groups & their uses)
	Spring Break---classes do not meet
15	<b><i>Other Characterization Techniques---Pt. 1</i></b>
16	Midterm Examination
17	<b><i>Other Characterization Techniques---Pt. 2</i></b>

18/19	Magnetic Properties
<b>20</b>	<b>Journal article----magnetic properties</b>
21/22	Electrical Properties
23/24/25	Optical Properties
26	Other Spectroscopic Techniques
<b>27/28</b>	<b>Presentations</b>
	<b>Final Exam</b>

## RESOURCES

OFFICE OF DISABILITY SERVICES --- If you are a student with a disability and need academic accommodations, please see me and contact the Office of Disability Services (ODS) at (703) 993-2474. All academic accommodations must be arranged through the ODS. Refer to <http://ods.gmu.edu>

WRITING CENTER --- <http://writingcenter.gmu.edu>

UNIVERSITY LIBRARIES --- "Ask a Librarian";  
<http://library.gmu.edu/mudge/IM/IMRef.html>

COUNSELING AND PSYCHOLOGICAL SERVICES (CAPS) --- (703) 993-2380;  
<http://caps.gmu.edu>

UNIVERSITY POLICIES --- The University Catalog, <http://catalog.gmu.edu>, is the central resource for university policies affecting student, faculty, and staff conduct in university affairs.

As a faculty member and designated "Responsible Employee", I am required to report all disclosures of sexual assault, interpersonal violence, and stalking to Mason's Title IX Coordinator per university policy 1412. If you wish to speak with someone confidentially, please contact the Student Support and Advocacy Center (703-380-1434) or Counseling and Psychological Services (703-993-2380). You may also seek assistance from Mason's Title IX Coordinator (703-993-8730; [titleix@gmu.edu](mailto:titleix@gmu.edu)).

## Attendance

Students are expected to attend every class meeting, be punctual, and stay the entire class time. Those who are inexcusably absent from class can expect no aid on course work from

the instructor outside of class. Some special topics, review sessions, or make up classes may be scheduled outside of normal class time.

### **Schedule**

The syllabus lists the topics to be studied during each class meeting. The schedule is subject to change during the semester.

### **Disabilities Statement**

If you are seeking accommodations for this class, please first visit [ds.gmu.edu](http://ds.gmu.edu) for detailed information about the Disability Services registration process. Then please discuss your approved accommodations with me. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: [ods@gmu.edu](mailto:ods@gmu.edu), Phone: (703) 993-2474

### **Mason Diversity Statement**

George Mason University promotes a living and learning environment for outstanding growth and productivity among its students, faculty and staff. Through its curriculum, programs, policies, procedures, services and resources, Mason strives to maintain a quality environment for work, study and personal growth.

An emphasis upon diversity and inclusion throughout the campus community is essential to achieve these goals. Diversity is broadly defined to include such characteristics as, but not limited to, race, ethnicity, gender, religion, age, disability, and sexual orientation. Diversity also entails different viewpoints, philosophies, and perspectives. Attention to these aspects of diversity will help promote a culture of inclusion and belonging, and an environment where diverse opinions, backgrounds and practices have the opportunity to be voiced, heard and respected.

The reflection of Mason's commitment to diversity and inclusion goes beyond policies and procedures to focus on behavior at the individual, group and organizational level. The implementation of this commitment to diversity and inclusion is found in all settings, including individual work units and groups, student organizations and groups, and classroom settings; it is also found with the delivery of services and activities, including, but not limited to, curriculum, teaching, events, advising, research, service, and community outreach.

Acknowledging that the attainment of diversity and inclusion are dynamic and continuous processes, and that the larger societal setting has an evolving socio-cultural understanding of diversity and inclusion, Mason seeks to continuously improve its environment. To this end, the University promotes continuous monitoring and self- assessment regarding diversity. The aim is to incorporate diversity and inclusion within the philosophies and actions of the individual, group and organization, and to make improvements as needed.