CHEM 100 Chemical Science  
4 cr. Undergraduate.  
Introductory course in general inorganic chemistry designed for the student with little or no previous science training. 3 hrs lec, 1 hr dis.  
Prerequisites: Math 105(C) or Math 108(C) or Math 116(C) or Level 30 on Math Placement Test.  
Course Rules: Not open for cr to students who have cr in Chem 102.  
General Education Requirements: NS+  
Current Offerings: http://uwm.edu/schedule

CHEM 101 Chemical Science  
5 cr. Undergraduate.  
Introductory chemistry with an emphasis on organic chemistry and selected aspects of general chemistry. 3 hrs lec, 2 hrs lab, 1 hr dis.  
Prerequisites: a score of 1 on the chem placement test, & Level 30 on Math Placement Test or a satisfactory grade in any appropriate math course equal to or greater than UWM Math 105 or 108; or a grade of C or better in Chem 100(P).  
Course Rules: Designed for students in nursing and related fields. Not open for cr to students who have cr in Chem 341 or 343; may not serve as prereq for Chem 341 or 343.  
General Education Requirements: NS+  
Current Offerings: http://uwm.edu/schedule

CHEM 102 General Chemistry  
5 cr. Undergraduate.  
Introductory college chemistry. Modern fundamental principles of chemistry, with emphasis on the chemistry of nonmetals. 3 hrs lec, 3 hrs lab, 1 hr dis.  
Prerequisites: score of 1 on chem placement test, & Level 30 on Math Placement Test or a satisfactory grade in any appropriate math course equal to or greater than UWM Math 105 or 108; or min grade C in Chem 100(P).  
General Education Requirements: NS+  
Current Offerings: http://uwm.edu/schedule

CHEM 103 Survey of Biochemistry  
5 cr. Undergraduate.  
The nature of materials of biological systems. 3 hrs lec, 1 hr dis, 3 hrs lab.  
Prerequisites: grade of C or better in Chem 101(P).  
Course Rules: Designed for students in nursing and related fields. Not open for cr to chem majors; may not serve as a prereq for Chem 341 or 343.  
General Education Requirements: NS+  
Current Offerings: http://uwm.edu/schedule

CHEM 104 General Chemistry and Qualitative Analysis  
5 cr. Undergraduate.  
Continuation of Chem 102. 3 hrs lec, 3 hrs lab, 1 hr dis.  
Prerequisites: grade C or better in Chem 102(P).  
General Education Requirements: NS+  
Current Offerings: http://uwm.edu/schedule

CHEM 105 General Chemistry for Engineering  
5 cr. Undergraduate.  
Modern principles of chemistry with emphasis on applications in engineering fields.  
Prerequisites: score of 1 on chem placement test, Level 30 on Math Placement Test or a satisfactory grade in any appropriate math course equal to or greater than UWM Math 105 or 108; or in grade C in Chem 100(P).  
Course Rules: Not open to those w/cr in Chem 104(ER). Not a prereq for Chem 221, 341, or 343.  
General Education Requirements: NS+  
Current Offerings: http://uwm.edu/schedule

CHEM 106 Chemistry in the World Around Us--Chemistry for the Non-Science Major  
3 cr. Undergraduate.  
An introduction to chemistry with an emphasis on outlining how chemistry affects our everyday lives. 3 hrs lec, 2 hrs lab/dis.  
Prerequisites: none.  
Course Rules: Intended for non-science majors and minors; does not carry cr toward chem or biochem majors or chem minor.  
General Education Requirements: NS+  
Current Offerings: http://uwm.edu/schedule

CHEM 106 Chemistry in the World Around Us--Chemistry for the Non-Science Major  
3 cr. Undergraduate.  
An introduction to chemistry with an emphasis on outlining how chemistry affects our everyday lives. 3 hrs lec, 2 hrs lab/dis.  
Prerequisites: none.  
Course Rules: Intended for non-science majors and minors; does not carry cr toward chem or biochem majors or chem minor.  
General Education Requirements: NS+  
Current Offerings: http://uwm.edu/schedule

CHEM 185 Basic Chemistry for Teachers  
3 cr. Undergraduate.  
Chemical models, atoms, and molecules; properties of elements; useful chemical reactions; application to elementary education classrooms. 2 hrs lec; 2 hrs lab/dis.  
Prerequisites: Math 176(P) or cons instr.  
General Education Requirements: NS+  
Last Taught: Fall 2018, Fall 2017, Fall 2016, Fall 2015.  
Current Offerings: http://uwm.edu/schedule

CHEM 194 First-Year Seminar  
3 cr. Undergraduate.  
The specific topics are announced in the Schedule of Classes each time the class is offered.  
Prerequisites: none.  
Course Rules: Open only to freshmen. Students may earn cr in just one L&S First-Year Sem (course numbers 192, 193, 194).  
General Education Requirements: NS  
Last Taught: Fall 2016, Fall 2015, Fall 2002, Fall 2001.  
Current Offerings: http://uwm.edu/schedule

CHEM 210 Introduction to Fermentation Chemistry  
3 cr. Undergraduate.  
Concepts of chemistry in the context of fermentation. The ideas of mass balance, equilibrium, rate and catalysis are applicable to fermentation.  
Prerequisites: none.  
Current Offerings: http://uwm.edu/schedule

CHEM 221 Elementary Quantitative Analysis  
4 cr. Undergraduate.  
Introduction to modern chemical analysis, including volumetric, gravimetric, electrochemical, and chromatographic methods. 2 hrs lec, 6 hrs lab.  
Prerequisites: a grade of C or better in Chem 104(P).  
Current Offerings: http://uwm.edu/schedule
CHEM 281 Dead Men Do Tell Tales: An Introduction to Forensic Science
3 cr. Undergraduate.
A multidisciplinary view of how forensic scientists contribute to the many ways that physical evidence is collected, analyzed, and evaluated.
Prerequisites: none.
Course Rules: Jointly offered with & counts as repeat of Anthro/BMS/Crm Jst 281.
Last Taught: Fall 2018, Fall 2017, Fall 2016, Fall 2015.
Current Offerings: http://uwm.edu/schedule

CHEM 285 Medicolegal Death Investigation
3 cr. Undergraduate.
Lectures on the fundamentals of death investigation as outlined by national guidelines for death investigators.
Prerequisites: none; add'l prereqs may be assigned to specific topic.
Course Rules: Jointly-offered with & counts as repeat of Anthro/BMS(C L Sci)/Crm Jst 285.
Last Taught: Fall 2015, Fall 2014, Fall 2013, Fall 2012.
Current Offerings: http://uwm.edu/schedule

CHEM 289 Internship in Chemistry, Lower Division
1-6 cr. Undergraduate.
Application of basic principles of chemistry in a business, organizational, educational, political, or other appropriate setting.
Prerequisites: intro course in chem; 2.25 gpa; cons supervising faculty member.
Course Rules: One cr earned for academic work based on 40 hours in internship. May be retaken to 6 cr max.
Current Offerings: http://uwm.edu/schedule

CHEM 297 Study Abroad:
1-12 cr. Undergraduate.
Designed to enroll students in UWM sponsored program before course work level, content and credits are determined and/or in specially prepared program course work.
Prerequisites: acceptance for Study Abroad Prog.
Course Rules: May be retaken w/chg in topic.
Current Offerings: http://uwm.edu/schedule

CHEM 299 Ad Hoc:
1-6 cr. Undergraduate.
Course created expressly for offering in a specified enrollment period. Requires only dept & assoc dean approval. In exceptional circumstances, can be offered in one add'l sem. May be retaken w/chg in topic.
Prerequisites: none; add'l prereqs may be assigned to specific topic.
Last Taught: Spring 2018, Fall 2015.
Current Offerings: http://uwm.edu/schedule

CHEM 311 Introduction to Inorganic Chemistry
3 cr. Undergraduate.
Inorganic chemistry, solid state chemistry, coordination chemistry, main-group chemistry.
Prerequisites: grade of C or better in Chem 104(P).
Last Taught: Fall 2018, Fall 2017, Fall 2016, Fall 2015.
Current Offerings: http://uwm.edu/schedule

CHEM 314 Organic Chemistry
3 cr. Undergraduate.
Continuation of Chem 313. Intended for students who expect to take only one semester of organic chemistry.
Prerequisites: grade of C or better in Chem 104(P); conc reg in Chem 342(R).
Course Rules: Not open for cr to students who have credit in Chem 343.
Last Taught: Fall 2018, Fall 2017, Fall 2016, Fall 2015.
Current Offerings: http://uwm.edu/schedule

CHEM 315 Organic Chemistry Laboratory
2 cr. Undergraduate.
6 hrs lab.
Prerequisites: grade of C or better in Chem 104(P); conc reg in Chem 342(R).
Last Taught: Fall 2018, Fall 2017, Fall 2016, Fall 2015.
Current Offerings: http://uwm.edu/schedule

CHEM 331 Introduction to Forensic Science
3 cr. Undergraduate.
A multidisciplinary view of how forensic scientists contribute to the many ways that physical evidence is collected, analyzed, and evaluated.
Prerequisites: none.
Course Rules: Jointly offered with & counts as repeat of Anthro/BMS/Crm Jst 281.
Last Taught: Fall 2018, Fall 2017, Fall 2016, Fall 2015.
Current Offerings: http://uwm.edu/schedule

CHEM 341 Introductory Survey of Organic Chemistry
3 cr. Undergraduate.
Intended for students who expect to take only one semester of organic chemistry.
Prerequisites: grade of C or better in Chem 104(P); conc reg in Chem 342(R).
Course Rules: Not open for cr to students who have credit in Chem 343.
Last Taught: Fall 2018, Fall 2017, Fall 2016, Fall 2015.
Current Offerings: http://uwm.edu/schedule

CHEM 342 Introductory Organic Chemistry Laboratory
2 cr. Undergraduate.
6 hrs lab.
Prerequisites: a grade of C or better in Chem 104(P); conc reg in 341(R).
Current Offerings: http://uwm.edu/schedule

CHEM 343 Organic Chemistry
3 cr. Undergraduate.
For students who intend to take more than one semester of organic chemistry.
Prerequisites: grade of C or better in Chem 104(P).
Course Rules: Not open for cr to students who have credit in Chem 343.
Current Offerings: http://uwm.edu/schedule

CHEM 344 Organic Chemistry Laboratory
2 cr. Undergraduate.
6 hr lab.
Prerequisites: grade C or better Chem 343(P); conc reg Chem 345(R).
Course Rules: Not open for cr to students who have credit in Chem 342.
Current Offerings: http://uwm.edu/schedule

CHEM 345 Organic Chemistry
3 cr. Undergraduate.
Continuation of Chem 343.
Prerequisites: grade of C or better in Chem 343(P); conc reg Chem 344(R).
Current Offerings: http://uwm.edu/schedule

CHEM 381 Honors Seminar:
3 cr. Undergraduate.
Discussion of aspects of the relationship of chemistry and society.
Prerequisites: soph st; Honors 200(P); cons Honors College dir; add'l prereq possible depending on specific topic.
Course Rules: May be retaken w/chg in topic to 9 cr max.
General Education Requirements: NS
Last Taught: Spring 2018, Fall 2017, Spring 2017, Fall 2016.
Current Offerings: http://uwm.edu/schedule

CHEM 389 Special Chemical Problems:
1-4 cr. Undergraduate.
Directed study or research on topics selected by the instructor.
Prerequisites: Chem 104(P); cons instn.
Course Rules: May be retaken to 7 cr max.
Current Offerings: http://uwm.edu/schedule
CHEM 481 Criminalistics
3 cr. Undergraduate.
Instruction on collection, preservation, and analysis of physical evidence from crime scenes. Instruction on the rules of evidence and expert testimony.
Prerequisites: jr st; admis to Forensic Sci cert prog; Anthro/Chem/C L Sci/Crm Jst 281(P); Crm Jst 480(P).
Course Rules: Anthro 481, Chem 481, BMS(C L Sci) 481, & Crm Jst 481 are jointly offered; they count as repeats of one another.
Current Offerings: http://uwm.edu/schedule

CHEM 489 Internship in Chemistry, Upper Division
1-6 cr. Undergraduate.
Application of advanced principles of chemistry in a business, organizational, educational, political, or other appropriate setting.
Prerequisites: jr st, 300-level or above course in Chem; 2.25 gpa; cons supervising faculty member.
Course Rules: One cr earned for academic work based on 40 hours in internship. May be retaken to 6 cr max.
Current Offerings: http://uwm.edu/schedule

CHEM 497 Study Abroad:
1-12 cr. Undergraduate/Graduate.
Designed to enroll students in UWM sponsored program before course work level, content and credits are determined and/or in specially prepared program course work.
Prerequisites: jr st; acceptance for Study Abroad Prog.
Course Rules: May be retaken w/chg in topic.
Current Offerings: http://uwm.edu/schedule

CHEM 499 Ad Hoc:
1-6 cr. Undergraduate.
Course created expressly for offering in a specified enrollment period. Requires only dept & assoc dean approval. In exceptional circumstances, can be offered in one add'l sem.
Prerequisites: jr st.
Course Rules: May be retaken w/chg in topic.
Current Offerings: http://uwm.edu/schedule

CHEM 501 Introduction to Biochemistry
3 cr. Undergraduate/Graduate.
The chemistry of biological systems.
Prerequisites: jr st; grade of C or better in Chem 341(P) or 345(P).
Course Rules: Does not count toward graduate degree in chemistry.
Last Taught: Fall 2018, Spring 2018.
Current Offerings: http://uwm.edu/schedule

CHEM 501G Introduction to Biochemistry
3 cr. Undergraduate/Graduate.
The chemistry of biological systems.
Prerequisites: jr st; grade of C or better in Chem 341(P) or 345(P).
Course Rules: Does not count toward graduate degree in chemistry.
Last Taught: Fall 2018, Spring 2018.
Current Offerings: http://uwm.edu/schedule

CHEM 502 Development of Modern Chemistry
2 cr. Undergraduate/Graduate.
Traces the development of chemistry from ancient to modern times.
Prerequisites: jr st; a grade of C or better in Chem 221(P) or 223(P), & Chem 341(P) or 343(P).
Current Offerings: http://uwm.edu/schedule

CHEM 511 Inorganic Chemistry
3 cr. Undergraduate/Graduate.
Introduction to theoretical principles and descriptive chemistry of the elements.
Prerequisites: jr st & grade of C or better in Chem 562(P); or grad st.
Course Rules: Does not count toward graduate degree in Chemistry.
Current Offerings: http://uwm.edu/schedule

CHEM 524 Instrumental Analysis
3 cr. Undergraduate/Graduate.
Chemical equilibria, separations, and theory and practice of instrumental measurements.
Prerequisites: jr st; grade of C or better in Chem 221(P) or 223(P).
Course Rules: Does not count toward a graduate degree in chemistry.
Last Taught: Fall 2018, Fall 2017.
Current Offerings: http://uwm.edu/schedule

CHEM 524G Instrumental Analysis
3 cr. Undergraduate/Graduate.
Chemical equilibria, separations, and theory and practice of instrumental measurements.
Prerequisites: jr st; grade of C or better in Chem 221(P) or 223(P).
Course Rules: Does not count toward a graduate degree in chemistry.
Last Taught: Fall 2018, Fall 2017.
Current Offerings: http://uwm.edu/schedule

CHEM 537 Industrial Microbiology and Biochemistry Laboratory
2 cr. Undergraduate/Graduate.
Experiments using industrial fermentation approaches for isolation of biologically-relevant molecules, e.g., antibiotics; analysis of their function and activity using microbiological and biochemical techniques.
Course Rules: Bio Sci 537 & Chem 537 are jointly offered; they count as repeats of one another.
Last Taught: Fall 2015.
Current Offerings: http://uwm.edu/schedule

CHEM 541 Bioprocess Chemical Engineering
3 cr. Undergraduate.
Technical aspects of biotechnology and fermentation based on reactor design and function.
Prerequisites: jr st; grade of C or better in Chem 501(P).
Last Taught: Fall 2015.
Current Offerings: http://uwm.edu/schedule

CHEM 543 Bioproduct Regulatory Protocols Laboratory
3 cr. Undergraduate/Graduate.
Experiments in the production, purification, and characterization of biopharmaceuticals for the treatment of human disease in compliance with ICH and FDA guidelines.
Prerequisites: jr st; Chem/Bio Sci 537(P); Chem 541(P); Chem 501(P).
Current Offerings: http://uwm.edu/schedule
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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offerings</th>
<th>Prerequisites</th>
<th>Last Taught</th>
<th>Course Rules</th>
<th>Current Offerings</th>
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<tbody>
<tr>
<td>CHEM 560 Biophysical Chemistry</td>
<td>3 cr. Undergraduate/Graduate.</td>
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<td>General course designed for majors in fields other than chemistry.</td>
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<td><strong>Prerequisites:</strong> jr st; grade of C or better in Chem 104(P); Math 211(P) or equiv.</td>
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<td>CHEM 560G Biophysical Chemistry</td>
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<td>General course designed for majors in fields other than chemistry.</td>
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<td>CHEM 561 Physical Chemistry I</td>
<td>3 cr. Undergraduate/Graduate.</td>
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<td>Primary focus on chemical thermodynamics.</td>
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<td><strong>Prerequisites:</strong> jr st; grades of C or better in Chem 104(P), Physics 210(P) &amp; 215(P), &amp; Math 233(P), &amp; ElecEng 234(R) or Math 234(R).</td>
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<td>CHEM 562 Physical Chemistry II</td>
<td>3 cr. Undergraduate/Graduate.</td>
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<td>Continuation of Chem 561; course content is largely kinetics, statistical mechanics, and quantum chemistry.</td>
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<td><strong>Prerequisites:</strong> jr st; grade of C or better in Chem 561(P).</td>
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<td>CHEM 562G Physical Chemistry II</td>
<td>3 cr. Undergraduate/Graduate.</td>
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<td>Continuation of Chem 561; course content is largely kinetics, statistical mechanics, and quantum chemistry.</td>
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<td>CHEM 563 Physical Chemistry Laboratory</td>
<td>1-2 cr. Undergraduate/Graduate.</td>
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<td>Modern advanced chemical synthesis techniques.</td>
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<td><strong>Prerequisites:</strong> grade of C or better in Chem 344(P).</td>
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<td>CHEM 584 Advanced Chemistry Laboratory II</td>
<td>2 cr. Undergraduate.</td>
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<td>Advanced laboratory for analysis and characterization of chemical compounds.</td>
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<td><strong>Prerequisites:</strong> grade of C or better in Chem 344(P), 524(P), &amp; 563(P).</td>
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<td>CHEM 585 Internship in Forensic Toxicology</td>
<td>1-3 cr. Undergraduate.</td>
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<td>Practical experience in a forensic toxicology laboratory under the supervision of a toxicologist.</td>
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<td><strong>Prerequisites:</strong> jr st; admis to Forensic Sci cert prog; Anthro/Chem/BMS(C L Sci)/Crm Jst 281(P) &amp; 285(P); Chem 221(P) or 223(P); Crm Jst 480(P); Hepatitis B vaccine series or waiver.</td>
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<td><strong>Course Rules:</strong> Anthro 585, Chem 585, BMS(C L Sci) 585, &amp; Crm Jst 585 are jointly offered; they count as repeats of one another.</td>
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<td><strong>Last Taught:</strong> Fall 2014, Fall 2005, Spring 2004.</td>
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<td>CHEM 589 Internship in Death Investigation</td>
<td>1-3 cr. Undergraduate.</td>
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<td>Practical experience in death investigation under the supervision of a death investigator and forensic pathologist.</td>
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<td><strong>Prerequisites:</strong> jr st; admis to Forensic Sci certif prog; Anthro/Chem/ BMS(C L Sci)/Crm Jst 281(P); Crm Jst 480(P); BMS(C L Sci) 620(R); Hepatitis B vaccine series or waiver.</td>
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<td><strong>Course Rules:</strong> Anthro 589, Chem 589, BMS(C L Sci) 589, &amp; Crm Jst 589 are jointly offered; they count as repeats of one another.</td>
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<td>CHEM 594 Internship in Forensic Science</td>
<td>1-3 cr. Undergraduate.</td>
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<td>On-site shadowing of evidence analyst at State Crime Laboratory.</td>
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<td><strong>Prerequisites:</strong> jr st; admis to Forensic Sci cert prog; Anthro/Chem/BMS(C L Sci)/Crm Jst 281(P); Chem 221(P) or 223(P); Crm Jst 480(P); Hepatitis B vaccine series or waiver.</td>
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<td><strong>Course Rules:</strong> Anthro 594, Chem 594, BMS(C L Sci) 594, &amp; Crm Jst 594 are jointly offered; they count as repeats of one another.</td>
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<td><strong>Last Taught:</strong> Fall 2017, Fall 2016, Spring 2016, Fall 2015.</td>
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<td>CHEM 599 Special Projects in Chemistry</td>
<td>3-5 cr. Undergraduate.</td>
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<td>Directed study or research on subjects selected by the instructor. For further information consult dept chair.</td>
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<td><strong>Prerequisites:</strong> jr st; cons instr.</td>
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<td><strong>Course Rules:</strong> May be retaken to 7 cr max. Does not count toward a graduate degree in chemistry.</td>
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<td><strong>Last Taught:</strong> Fall 2017, Fall 2016, Spring 2016, Fall 2015.</td>
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**CHEM 601 Biochemistry: Protein Structure and Function**  
3 cr. Undergraduate/Graduate.  
Cellular synthesis of proteins, protein structure/function, enzyme mechanisms.  
**Prerequisites:** jr st; grades of C or better in Chem 345(P), 501(P), & either 560(C) or 562(C).  
**Last Taught:** Fall 2018, Fall 2017.  
**Current Offerings:** http://uwm.edu/schedule

**CHEM 601G Biochemistry: Protein Structure and Function**  
3 cr. Undergraduate/Graduate.  
Cellular synthesis of proteins, protein structure/function, enzyme mechanisms.  
**Prerequisites:** jr st; grades of C or better in Chem 345(P), 501(P), & either 560(C) or 562(C).  
**Last Taught:** Fall 2018, Fall 2017.  
**Current Offerings:** http://uwm.edu/schedule

**CHEM 602 Biochemistry: Cellular Processes**  
3 cr. Undergraduate/Graduate.  
Biosynthesis and metabolism of nucleic acids, structure and replication of DNA, control of gene expression, signal transduction.  
**Prerequisites:** jr st; grade of C or better in Chem 501(P) or cons instr.  
**Last Taught:** Spring 2018, Spring 2017, Spring 2016, Spring 2015.  
**Current Offerings:** http://uwm.edu/schedule

**CHEM 603 Introduction to Biochemistry Laboratory**  
2 cr. Undergraduate/Graduate.  
Experiments in biological preparations, colorimetry, chromatography, and radioisotope techniques.  
**Prerequisites:** jr st; grades of C or better in Chem 221(P) or 223(P) & in Chem 501(P).  
**Last Taught:** Fall 2018, Spring 2018.  
**Current Offerings:** http://uwm.edu/schedule

**CHEM 603G Introduction to Biochemistry Laboratory**  
2 cr. Undergraduate/Graduate.  
Experiments in biological preparations, colorimetry, chromatography, and radioisotope techniques.  
**Prerequisites:** jr st; grades of C or better in Chem 221(P) or 223(P) & in Chem 501(P).  
**Last Taught:** Fall 2018, Spring 2018.  
**Current Offerings:** http://uwm.edu/schedule

**CHEM 604 Biochemistry: Metabolism**  
3 cr. Undergraduate/Graduate.  
Glycolysis, photosynthesis, biosynthesis, metabolism.  
**Prerequisites:** jr st; grade of C or better in Chem 501(P) or cons instr.  
**Last Taught:** Spring 2018, Spring 2017, Spring 2016, Spring 2015.  
**Current Offerings:** http://uwm.edu/schedule

**CHEM 611 Physical Inorganic Chemistry**  
3 cr. Undergraduate/Graduate.  
Physical and theoretical aspects of inorganic chemistry (spectroscopy, crystallography, kinetic and theoretical methods) are discussed.  
**Prerequisites:** Chem 511(P) or cons instr.  
**Last Taught:** Spring 2018, Fall 2011, Spring 2010, Spring 2009.  
**Current Offerings:** http://uwm.edu/schedule

**CHEM 612 Transition Metal and Organometallic Chemistry**  
3 cr. Undergraduate/Graduate.  
Advanced survey of elements, emphasizing transition elements and organometallic species. Main group organometallics and actinides briefly discussed.  
**Prerequisites:** Chem 511(P) or cons instr.  
**Last Taught:** Spring 2017, Spring 2015, Fall 2012, Spring 2011.  
**Current Offerings:** http://uwm.edu/schedule

**CHEM 613 Main Group Chemistry**  
3 cr. Undergraduate/Graduate.  
Advanced survey of metallic and non-metallic main group elements.  
**Prerequisites:** jr st & grade of C or better in Chem 511(P); or grad st.  
**Current Offerings:** http://uwm.edu/schedule

**CHEM 614 Bio-Inorganic Chemistry**  
3 cr. Undergraduate/Graduate.  
Inorganic chemistry for biological systems; metaloproteins; coordination chemistry in enzymes.  
**Prerequisites:** jr st; grade of C or better in Chem 511(P).  
**Last Taught:** Spring 2012, Spring 2007.  
**Current Offerings:** http://uwm.edu/schedule

**CHEM 628 Nuclear and Radiochemistry**  
3 cr. Undergraduate/Graduate.  
Survey of modern nuclear and radiochemistry; emphasis on the interactions of radiation with matter and application in radiation detection and measurement.  
**Prerequisites:** jr st.; grades of B or better in Chem 524(P), 561(P), 562(P), & 563(P) or equiv; cons instr for undergrads.  
**Course Rules:** Counts as repeat of Chem 726 w/same topic.  
**Last Taught:** Spring 2018, Spring 2016.  
**Current Offerings:** http://uwm.edu/schedule

**CHEM 630 Computational Chemistry**  
3 cr. Undergraduate/Graduate.  
Computer modeling techniques for molecular systems.  
**Prerequisites:** jr st; grade of C or better in Chem 562(P) or cons instr.  
**Last Taught:** Fall 2014, Fall 2012, Fall 2010, Spring 2003.  
**Current Offerings:** http://uwm.edu/schedule

**CHEM 640 Advanced Survey of Organic Chemistry**  
3 cr. Undergraduate/Graduate.  
**Prerequisites:** jr st; a grade of C or better in Chem 345(P).  
**Last Taught:** Fall 2018, Fall 2017.  
**Current Offerings:** http://uwm.edu/schedule

**CHEM 640G Advanced Survey of Organic Chemistry**  
3 cr. Undergraduate/Graduate.  
**Prerequisites:** jr st; a grade of C or better in Chem 345(P).  
**Last Taught:** Fall 2018, Fall 2017.  
**Current Offerings:** http://uwm.edu/schedule

**CHEM 647 Physical Methods of Organic Chemistry**  
3 cr. Undergraduate/Graduate.  
Application of modern instrumental methods to the separation, analysis, and identification of organic compounds.  
**Prerequisites:** jr st, a grade of C or better in Chem 345(P), 346(P), 524(P).  
**Last Taught:** Spring 2015, Fall 2013.  
**Current Offerings:** http://uwm.edu/schedule
CHEM 647G Physical Methods of Organic Chemistry
3 cr. Undergraduate/Graduate.
Application of modern instrumental methods to the separation, analysis, and identification of organic compounds.
Prerequisites: jr st, a grade of C or better in Chem 345(P), 346(P), 524(P).
Last Taught: Spring 2015, Fall 2013.
Current Offerings: http://uwm.edu/schedule

CHEM 661 Intermediate Chemical Thermodynamics
3 cr. Undergraduate/Graduate.
Prerequisites: sr st, a grade of C or better in Chem 562(P).
Last Taught: Fall 2014, Fall 2013, Fall 2011, Fall 2010.
Current Offerings: http://uwm.edu/schedule

CHEM 662 Chemical Kinetics and Dynamics
3 cr. Undergraduate/Graduate.
Present understanding of reaction kinetics and dynamics. Topics range from experimental methods for kinetics measurements to microscopic theories of reaction rates.
Prerequisites: sr st; grade of C or better in Chem 562(P).
Last Taught: Fall 2018, Fall 2017.
Current Offerings: http://uwm.edu/schedule

CHEM 662G Chemical Kinetics and Dynamics
3 cr. Undergraduate/Graduate.
Present understanding of reaction kinetics and dynamics. Topics range from experimental methods for kinetics measurements to microscopic theories of reaction rates.
Prerequisites: sr st; grade of C or better in Chem 562(P).
Last Taught: Fall 2018, Fall 2017.
Current Offerings: http://uwm.edu/schedule

CHEM 690 Scientist Career Transitions Seminar
1 cr. Undergraduate.
Preparation of science undergraduates for transition to science-related employment internships.
Prerequisites: soph st; Chem 344(C) & 345(C) or equiv; 3,000 GPA in science courses; cons instr.
Course Rules: Counts as repeat of Chem 489 with similar topic.
Current Offerings: http://uwm.edu/schedule

CHEM 691 Senior Research
1-4 cr. Undergraduate.
Introduction to chemical research. Independent and original study done under the direction of a staff member; communication of results. Recom for Chem majors.
Prerequisites: sr st; cons instr.
Course Rules: Chem 691 & 692 may be retaken to combined 6 cr max.
Current Offerings: http://uwm.edu/schedule

CHEM 692 Senior Thesis
2-6 cr. Undergraduate.
Introduction to chemical research. Independent and original study done under the direction of a staff member. Recom for chem majors.
Prerequisites: sr st; grade of C or better in English 102(P) or score at level 4 on EPT; cons instr.
Course Rules: Chem 691 & 692 may be retaken to combined 6 cr max.
Current Offerings: http://uwm.edu/schedule

CHEM 697 Senior Seminar
1 cr. Undergraduate.
Prerequisites: sr st.
Current Offerings: http://uwm.edu/schedule

CHEM 701 Topics in Biochemistry:
2-4 cr. Graduate.
Selected topics in biochemistry. Two topics, each for 2 cr, will last 1/2 of the semester. Students may enroll in either (2 cr) or both (4 cr). The 3 cr option offers a more complete coverage of a single topic for a full semester.
Prerequisites: grad st; grade of C or better in Chem 501(P) or 601(P).
Course Rules: Retakable w/chg in topic to 9 cr max.
Last Taught: Spring 2018, Fall 2017, Spring 2016, Fall 2015.
Current Offerings: http://uwm.edu/schedule

CHEM 710 Advanced Survey of Inorganic Chemistry
3 cr. Graduate.
Graduate-level treatment of theoretical principles and descriptive chemistry of the elements.
Prerequisites: grad st.
Last Taught: Spring 2010, Fall 2008, Fall 2007, Fall 2006.
Current Offerings: http://uwm.edu/schedule

CHEM 711 Topics in Inorganic Chemistry:
3 cr. Graduate.
Selected topics of current research interest in inorganic chemistry are discussed in detail.
Prerequisites: grad st.
Course Rules: Retakable w/chg in topic to 9 cr max.
Last Taught: Fall 2015, Spring 2015, Fall 2013, Fall 2005.
Current Offerings: http://uwm.edu/schedule

CHEM 724 Electrochemistry
3 cr. Graduate.
Survey of modern electrochemical theory and applications to measurement of solution concentrations, rate constants, thermodynamic quantities, transport properties, and adsorption phenomena.
Prerequisites: grad st; grade of C or better in Chem 524(P) or 621(P).
Current Offerings: http://uwm.edu/schedule

CHEM 726 Topics in Analytical Chemistry:
3 cr. Graduate.
Selected topics which reflect current advances in analytical chemistry.
Prerequisites: grad st.
Course Rules: May be retaken with change in topic to max of 9 cr.
Current Offerings: http://uwm.edu/schedule
CHEM 740 Advanced Organic Chemistry-Methods in Synthetic Chemistry
3 cr. Graduate.
Discussion of name reactions and other synthetic methods of preparative significance used in organic syntheses. Introduction and modification of functional groups. Recent examples of application from modern organic chemistry.
Prerequisites: grad st; a grade of C or better in Chem 345(P).
Current Offerings: http://uwm.edu/schedule

CHEM 741 Topics in Organic Chemistry:
2-3 cr. Graduate.
Current topics in organic chemistry, e.g., organometallic compounds, biorganic chemistry, non-covalent interactions, reaction mechanisms, alkaloid total synthesis or photochemistry. Offered w/1 topic (3cr), w/2 (2cr ea); if two, take one or both.
Prerequisites: grad st; grade of C or better in Chem 345(P).
Course Rules: Retakable with change in topic to 9 cr max.
Current Offerings: http://uwm.edu/schedule

CHEM 743 Medicinal Chemistry: Drug Discovery/Lead Optimization & DNA as Drug Targets
3 cr. Graduate.
Major principles of drug discovery; focus on nucleic acids as drug targets.
Prerequisites: grad st.
Course Rules: Counts as repeat of Chem 741 w/ Medicinal Chemistry I topic.
Last Taught: Fall 2018, Fall 2015.
Current Offerings: http://uwm.edu/schedule

CHEM 744 Medicinal Chemistry: Pharmacokinetics/Enzymes & Receptors as Drug Targets
3 cr. Graduate.
Principles of drug development; focus on protein drug targets.
Prerequisites: grad st.
Course Rules: Counts as repeat of Chem 741 w/ Medicinal Chemistry II subtitle.
Current Offerings: http://uwm.edu/schedule

CHEM 748 Physical Organic Chemistry
3 cr. Graduate.
Application of kinetics and other physical principles to the determination of reaction mechanisms.
Prerequisites: grad st; a grade of C or better in Chem 562(P) & 640(P).
Current Offerings: http://uwm.edu/schedule

CHEM 762 Topics in Physical Chemistry:
3 cr. Graduate.
In-depth discussion of selected topics of current interest in modern physical chemistry.
Prerequisites: grad st.
Course Rules: Retakeable with change in topic to 9 cr max.
Last Taught: Spring 2017, Fall 2016, Fall 2008, Spring 1996.
Current Offerings: http://uwm.edu/schedule

CHEM 765 Statistical Thermodynamics
3 cr. Graduate.
Fundamental principles of statistical mechanics, with applications to topics of physiochemical interest.
Prerequisites: grad st; grade of C or better in Chem 661(P).
Current Offerings: http://uwm.edu/schedule

CHEM 767 Basic Quantum Chemistry
3 cr. Graduate.
Basic postulates of quantum mechanics and consequences. Exact solutions for simple systems. Approximation methods for complex systems. Group theory and applications in organic, inorganic, and physical chemistry.
Prerequisites: grad st; a grade of C or better in Chem 562(P), 564(P), & Math 234(P).
Current Offerings: http://uwm.edu/schedule

CHEM 769 Surface Chemistry II
3 cr. Graduate.
Discussion of kinetic methods of studying reaction mechanisms with particular emphasis on catalytic reactions.
Prerequisites: grad st; grade of C or better in Chem 768(P).
Current Offerings: http://uwm.edu/schedule

CHEM 780 Modern Industrial Organic Chemistry
3 cr. Graduate.
Organic chemical processes-comprehensive emphasis on chemistry, polymers (preparation, properties, application), energy aspects, raw material supplies, impact on nation’s and world’s economics.
Prerequisites: grad st.
Course Rules: Recommended for minor in polymer chem.
Current Offerings: http://uwm.edu/schedule

CHEM 781 Pulsed NMR Spectroscopy Theory and Practice
3 cr. Graduate.
Discussion and hands on practice of modern FT NMR approaches applied to analysis of chemical structure and dynamics in organic, inorganic, and biochemical molecules.
Prerequisites: grad st; cons instr.
Last Taught: Fall 2018, Fall 2017, Fall 2016, Fall 2015.
Current Offerings: http://uwm.edu/schedule

CHEM 782 Liquid Chromatography-Mass Spectrometry Fundamentals and Applications
3 cr. Graduate.
Discussion and hands on practice of modern mass spectrometry, with a focus on liquid chromatography/mass spectrometry (LC/MS) and LC/tandem MS (LC/MS/MS), as well as ICP-MS.
Prerequisites: grad st; cons instr.
Current Offerings: http://uwm.edu/schedule
CHEM 798 Scientific Glassblowing
1 cr. Graduate.
Techniques in design and maintenance of scientific glassware including low pressure systems together with consideration of the chemical structure and properties of common glasses.
Prerequisites: grad st.
Current Offerings: http://uwm.edu/schedule

CHEM 900 Chemistry Colloquium
0 cr. Graduate.
Weekly lectures on current research by members of the department and visiting scientists.
Prerequisites: grad st.

CHEM 912 Graduate Seminar
1 cr. Graduate.
Research problems in chemistry. Weekly papers and reports.
Prerequisites: grad st.
Course Rules: Required of all Chem grad students.
Last Taught: Spring 2012, Fall 2011, Spring 2011, Fall 2010.
Current Offerings: http://uwm.edu/schedule

CHEM 931 Advanced Seminar in Analytical Chemistry
1 cr. Graduate.
Weekly discussions and reports on recent developments and current progress in analytical chemistry. Topics will differ each semester, reflecting current work of particular interest.
Prerequisites: grad st & enroll in Chem 993(C).
Course Rules: Retakable to 9 cr max. No more than 9 cr may be accumulated in courses numbered 931-935.
Current Offerings: http://uwm.edu/schedule

CHEM 932 Advanced Seminar in Biochemistry
1 cr. Graduate.
Weekly discussions and reports on recent developments and current progress in biochemistry. Topics will differ each semester, reflecting current work of particular interest.
Prerequisites: grad st & enroll in Chem 994(C).
Course Rules: Retakable to 9 cr max. No more than 9 cr may be accumulated in courses numbered 931-935.
Current Offerings: http://uwm.edu/schedule

CHEM 933 Advanced Seminar in Inorganic Chemistry
1 cr. Graduate.
Weekly discussions and reports on recent developments and current progress in inorganic chemistry. Topics will differ each semester, reflecting current work of particular interest.
Prerequisites: grad st & enroll in Chem 996(C).
Course Rules: Retakable to 9 cr max. No more than 9 cr may be accumulated in courses numbered 931-935.
Current Offerings: http://uwm.edu/schedule

CHEM 934 Advanced Seminar in Organic Chemistry
1 cr. Graduate.
Weekly discussions and reports on recent developments and current progress in organic chemistry. Topics will differ each semester, reflecting current work of particular interest.
Prerequisites: grad st & enroll in Chem 990(C).
Course Rules: Retakable to 9 cr max. No more than 9 cr may be accumulated in courses numbered 931-935.
Current Offerings: http://uwm.edu/schedule

CHEM 935 Advanced Seminar in Physical Chemistry
1 cr. Graduate.
Weekly discussions and reports on recent developments and current progress in physical chemistry. Topics will differ each semester, reflecting current work of particular interest.
Prerequisites: grad st & enroll in Chem 992.
Course Rules: Retakable to 9 cr max. No more than 9 cr may be accumulated in courses numbered 931-935.
Current Offerings: http://uwm.edu/schedule

CHEM 990 Research: Organic
1-9 cr. Graduate.
Prerequisites: grad st.
Course Rules: Retakable.
Current Offerings: http://uwm.edu/schedule

CHEM 991 Research: Chemical Education
1-9 cr. Graduate.
Research in chemical education.
Prerequisites: grad st.
Course Rules: Retakable.
Current Offerings: http://uwm.edu/schedule

CHEM 992 Research: Physical
1-9 cr. Graduate.
Prerequisites: grad st.
Course Rules: Retakable.
Current Offerings: http://uwm.edu/schedule

CHEM 993 Research: Analytical
1-9 cr. Graduate.
Prerequisites: grad st.
Course Rules: Retakable.
Current Offerings: http://uwm.edu/schedule

CHEM 994 Research: Inorganic
1-9 cr. Graduate.
Prerequisites: grad st.
Course Rules: Retakable.
Current Offerings: http://uwm.edu/schedule
CHEM 996 Research: Biochemical
1-9 cr. Graduate.
Prerequisites: grad st.
Course Rules: Retakable.
Current Offerings: http://uwm.edu/schedule