

CHEMISTRY AND BIOCHEMISTRY (CHEM)

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

Last Taught: Summer 2018, Spring 2018, Fall 2017, Summer 2017.

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+

Last Taught: Spring 2018, Fall 2017, Spring 2017, Fall 2016.

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+

Last Taught: Summer 2018, Spring 2018, Fall 2017, Summer 2017.

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+

Last Taught: Spring 2018, Fall 2017, Spring 2017, Fall 2016.

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+

Last Taught: Summer 2018, Spring 2018, Fall 2017, Summer 2017.

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+

Last Taught: Spring 2018, Fall 2017, Spring 2017, Fall 2016.

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+

Last Taught: Spring 2018, Spring 2017, Spring 2016, Fall 2015.

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 2017, Fall 2016, Fall 2015, Fall 2014.

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).

Last Taught: Spring 2018, Fall 2017, Spring 2017, Fall 2016.

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 2017, Fall 2016, Fall 2015, Fall 2014.**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.**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.**Last Taught:** Summer 2018, Fall 2010, Spring 2009, Fall 2008.**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.**Last Taught:** Spring 2017, Spring 2010, Spring 2009.**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 2017, Fall 2016, Fall 2015, Fall 2014.**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 2017, Fall 2016, Fall 2015, Fall 2014.**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).**Last Taught:** Fall 2017, Fall 2016, Fall 2015, Fall 2014.**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 341.**Last Taught:** Summer 2018, Spring 2018, Fall 2017, Summer 2017.**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.**Last Taught:** Summer 2018, Spring 2018, Fall 2017, Summer 2017.**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).**Last Taught:** Summer 2018, Spring 2018, Fall 2017, Summer 2017.**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 399 Special Chemical Problems:**

1-4 cr. Undergraduate.

Directed study or research on topics selected by the instructor.

Prerequisites: Chem 104(P); cons instr.**Course Rules:** May be retaken to 7 cr max.**Last Taught:** Summer 2018, Spring 2018, Fall 2017, Summer 2017.**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.

Last Taught: Spring 2017, Spring 2016, Spring 2015, Spring 2014.

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.

Last Taught: Spring 2018, Spring 2017, Summer 2015, Spring 2015.

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.

Last Taught: Fall 2008, Spring 2000, Spring 1999, Spring 1995.

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: Spring 2018, Fall 2017.

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: Spring 2018, Fall 2017.

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).

Last Taught: Spring 2018, Fall 2014, Spring 2014, Spring 2013.

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.

Last Taught: Spring 2017, Spring 2016, Spring 2015, Spring 2014.

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 2017, Fall 2016.

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 2017, Fall 2016.

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.

Prerequisites: Bio Sci 383(P) & Chem 501(P).

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).

Last Taught: Spring 2017, Spring 2016.

Current Offerings: <http://uwm.edu/schedule>

CHEM 560 Biophysical Chemistry

3 cr. Undergraduate/Graduate.

General course designed for majors in fields other than chemistry.

Prerequisites: jr st; grade of C or better in Chem 104(P); Math 211(P) or equiv.**Course Rules:** Does not count toward a graduate degree in chemistry.**Last Taught:** Fall 2017, Fall 2016.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 560G Biophysical Chemistry**

3 cr. Undergraduate/Graduate.

General course designed for majors in fields other than chemistry.

Prerequisites: jr st; grade of C or better in Chem 104(P); Math 211(P) or equiv.**Course Rules:** Does not count toward a graduate degree in chemistry.**Last Taught:** Fall 2017, Fall 2016.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 561 Physical Chemistry I**

3 cr. Undergraduate/Graduate.

Primary focus on chemical thermodynamics.

Prerequisites: jr st; grades of C or better in Chem 104(P), Physics 210(P) & 215(P), & Math 233(P); ElecEng 234(R) or Math 234(R).**Course Rules:** Does not count toward a graduate degree in chemistry.**Last Taught:** Spring 2018, Spring 2017, Spring 2016, Spring 2015.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 562 Physical Chemistry II**

3 cr. Undergraduate/Graduate.

Continuation of Chem 561; course content is largely kinetics, statistical mechanics, and quantum chemistry.

Prerequisites: jr st; grade of C or better in Chem 561(P).**Course Rules:** Does not count toward a graduate degree in chemistry.**Last Taught:** Fall 2017, Fall 2016.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 562G Physical Chemistry II**

3 cr. Undergraduate/Graduate.

Continuation of Chem 561; course content is largely kinetics, statistical mechanics, and quantum chemistry.

Prerequisites: jr st; grade of C or better in Chem 561(P).**Course Rules:** Does not count toward a graduate degree in chemistry.**Last Taught:** Fall 2017, Fall 2016.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 563 Physical Chemistry Laboratory**

1-2 cr. Undergraduate/Graduate.

Prerequisites: jr st & grade of C or better in Chem 221(P) or 223(P) & Chem 561(P).**Course Rules:** Carries grad cr for students other than chem students.**Last Taught:** Fall 2017, Fall 2016.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 563G Physical Chemistry Laboratory**

1-2 cr. Undergraduate/Graduate.

Prerequisites: jr st & grade of C or better in Chem 221(P) or 223(P) & Chem 561(P).**Course Rules:** Carries grad cr for students other than chem students.**Last Taught:** Fall 2017, Fall 2016.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 582 Advanced Chemistry Laboratory I**

2 cr. Undergraduate.

Modern advanced chemical synthesis techniques.

Prerequisites: grade of C or better in Chem 344(P).**Last Taught:** Fall 2017, Fall 2016, Fall 2015, Fall 2014.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 584 Advanced Chemistry Laboratory II**

2 cr. Undergraduate.

Advanced laboratory for analysis and characterization of chemical compounds.

Prerequisites: grade of C or better in Chem 344(P), 524(P), & 563(P).**Last Taught:** Spring 2018, Spring 2017, Spring 2016, Spring 2015.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 585 Internship in Forensic Toxicology**

1-3 cr. Undergraduate.

Practical experience in a forensic toxicology laboratory under the supervision of a toxicologist.

Prerequisites: jr st; admis to Forensic Sci cert prog; Anthro/Chem/BMS(C L Sci)/Crm Jst 281(P) & 285(P); Chem 221(P) or 223(P); Crm Jst 480(P); Hepatitis B vaccine series or waiver.**Course Rules:** Anthro 585, Chem 585, BMS(C L Sci) 585, & Crm Jst 585 are jointly offered; they count as repeats of one another.**Last Taught:** Fall 2014, Fall 2005, Spring 2004.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 589 Internship in Death Investigation**

1-3 cr. Undergraduate.

Practical experience in death investigation under the supervision of a death investigator and forensic pathologist.

Prerequisites: jr st; admis to Forensic Sci cert 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.**Course Rules:** Anthro 589, Chem 589, BMS(C L Sci) 589, & Crm Jst 589 are jointly offered; they count as repeats of one another.**Last Taught:** Spring 2012, Fall 2002.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 594 Internship in Forensic Science**

1-3 cr. Undergraduate.

On-site shadowing of evidence analyst at State Crime Laboratory.

Prerequisites: 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.**Course Rules:** Anthro 594, Chem 594, BMS(C L Sci) 594, & Crm Jst 594 are jointly offered; they count as repeats of one another.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 599 Special Projects in Chemistry**

3-5 cr. Undergraduate/Graduate.

Directed study or research on subjects selected by the instructor. For further information consult dept chair.

Prerequisites: jr st; cons instr.**Course Rules:** May be retaken to 7 cr max. Does not count toward a graduate degree in chemistry.**Last Taught:** Fall 2017, Fall 2016, Spring 2016, Fall 2015.**Current Offerings:** <http://uwm.edu/schedule>

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 2017, Fall 2016.

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 2017, Fall 2016.

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: Spring 2018, Fall 2017.

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: Spring 2018, Fall 2017.

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 and lanthanides 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; metalloproteins; 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 2017, Fall 2016.

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 2017, Fall 2016.

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.

Laws of thermodynamics equilibria between phases. Introductory statistical thermodynamics. Thermodynamic properties of gases, solids, and solutions.

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 2017, Fall 2016.**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 2017, Fall 2016.**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.**Last Taught:** Spring 2018, Spring 2017, Spring 2016.**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.**Last Taught:** Summer 2018, Spring 2018, Fall 2017, Summer 2017.**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.**Last Taught:** Summer 2018, Spring 2018, Summer 2017, Spring 2017.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 697 Senior Seminar**

1 cr. Undergraduate.

Prerequisites: sr st.**Last Taught:** Fall 2016, Fall 2015, Spring 2007, Spring 2006.**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.

Surey 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).**Last Taught:** Fall 2009, Fall 2005, Fall 2003, Spring 2001.**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.**Last Taught:** Spring 2017, Spring 2015, Spring 2014, Spring 2012.**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).

Last Taught: Spring 2009, Spring 2006, Spring 2003, Spring 2000.

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, bioorganic 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 w/chg in topic to 9 cr max.

Last Taught: Spring 2018, Spring 2017, Fall 2016, Spring 2016.

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 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.

Last Taught: Spring 2018, Spring 2016.

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).

Last Taught: Fall 2017, Spring 2013, Spring 2011, Spring 2005.

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 physicochemical interest.

Prerequisites: grad st; grade of C or better in Chem 661(P).

Last Taught: Spring 2016, Spring 2014, Fall 2012, Spring 2011.

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).

Last Taught: Spring 2018, Spring 2016, Spring 2014, Spring 2012.

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).

Last Taught: Spring 2017, Spring 2015, Spring 2013, Spring 2010.

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.

Last Taught: Spring 2017, Spring 2013, Spring 2011, Spring 2002.

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 2017, Fall 2016, Fall 2015, Fall 2014.

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.

Last Taught: Spring 2018, Spring 2017, Spring 2015.

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.**Last Taught:** Fall 2017, Spring 2017, Fall 2016, Spring 2016.**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.**Course Rules:** Fee assessed for 1 cr. Required of all Chem grad students.**Last Taught:** Spring 2012, Fall 2011, Spring 2011, Fall 2010.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 912 Graduate Seminar**

1 cr. Graduate.

Research problems in chemistry. Weekly papers and reports.

Prerequisites: grad st.**Course Rules:** Required of all candidates for advanced degree.**Last Taught:** Spring 2018, Fall 2017, Spring 2017, Fall 2016.**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.**Last Taught:** Spring 2018, Fall 2017, Spring 2017, Fall 2016.**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 996(C).**Course Rules:** Retakable to 9 cr max. No more than 9 cr may be accumulated in courses numbered 931-935.**Last Taught:** Spring 2018, Fall 2017, Spring 2017, Fall 2016.**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 994(C).**Course Rules:** Retakable to 9 cr max. No more than 9 cr may be accumulated in courses numbered 931-935.**Last Taught:** Spring 2018, Fall 2017, Spring 2017, Fall 2016.**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.**Last Taught:** Spring 2018, Fall 2017, Spring 2017, Fall 2016.**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.**Last Taught:** Spring 2018, Fall 2017, Spring 2017, Fall 2016.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 990 Research: Organic**

1-9 cr. Graduate.

Prerequisites: grad st.**Course Rules:** Retakable.**Last Taught:** Spring 2018, Fall 2017, Summer 2017, Spring 2017.**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.**Last Taught:** Spring 2018, Fall 2017, Spring 2017, Fall 2016.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 992 Research: Physical**

1-9 cr. Graduate.

Prerequisites: grad st.**Course Rules:** Retakable.**Last Taught:** Spring 2018, Fall 2017, Summer 2017, Spring 2017.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 993 Research: Analytical**

1-9 cr. Graduate.

Prerequisites: grad st.**Course Rules:** Retakable.**Last Taught:** Summer 2018, Spring 2018, Fall 2017, Summer 2017.**Current Offerings:** <http://uwm.edu/schedule>**CHEM 994 Research: Inorganic**

1-9 cr. Graduate.

Prerequisites: grad st.**Course Rules:** Retakable.**Last Taught:** Summer 2018, Spring 2018, Fall 2017, Summer 2017.**Current Offerings:** <http://uwm.edu/schedule>

CHEM 996 Research: Biochemical

1-9 cr. Graduate.

Prerequisites: grad st.

Course Rules: Retakable.

Last Taught: Summer 2018, Spring 2018, Fall 2017, Spring 2017.

Current Offerings: <http://uwm.edu/schedule>