CHEM 225. Spectroscopic Identification of Organic Compounds. Theoretical and practical aspects of spectroscopic methods, with an emphasis on NMR spectroscopy, for structural characterization of organic compounds. Prerequisite: 218b or 220b. [3] (MNS)


CHEM 227W. Forensic Analytical Chemistry. Techniques, methodologies, data collection, and interpretation. Laboratory experience with drug analysis, toxicology, trace, and arson analysis. Two hours of lecture and one four-hour laboratory per week. Prerequisite: 210 and 212a. [3] (MNS)

CHEM 230. Physical Chemistry: Quantum Mechanics, Spectroscopy, and Kinetics. Chemical kinetics and principles of quantum chemistry applied to molecular structure, bonding, and spectroscopy. Prior study of multivariable calculus is expected. No credit for graduate students in chemistry. Prerequisite or corequisite: PHYS 116a or 121a. Prerequisite: Math 150b or 155b. [3] (MNS)

CHEM 231. Biophysical Chemistry: Thermodynamics in Chemical and Biological Systems. Chemical thermodynamics and equilibrium, their statistical foundation, and applications to chemical and biological phenomena in biomedical research. Prerequisite or corequisite: PHYS 116a or 121a. Prerequisite: Math 150b or 155b. [3] (MNS)


CHEM 236. Physical Chemistry Laboratory. Experiments in chemical thermodynamics and kinetics. Data analysis and presentation. No credit for graduate students in chemistry. One three-hour laboratory or one lecture per week. Calculus through Math 175 recommended. Prerequisite: 210b and either Math 150b or 155b. [1] (No AXLE credit)

CHEM 240. Introduction to Nanochemistry. Synthesis, characterization, and assembly of nanoscale materials. No credit for graduate students in chemistry. Prerequisite: 102b. [3] (MNS)

CHEM 250. Chemical Literature. Assigned readings and problems in the nature and use of the chemical literature. Prerequisite: 218b or 220b. [1] (No AXLE credit)

CHEM 282. Undergraduate Research. Open to students who have earned at least 8 hours of credit and a minimum GPA of 2.7 in chemistry, with consent of the director of undergraduate studies and the sponsoring faculty member. May be repeated for credit more than once if there is no duplication in topic, but students may earn only up to 3 credits per semester of enrollment. [1-3] (No AXLE credit)

CHEM 291a. Readings for Honors. Open only to students in the departmental honors program. General reading supervised by research adviser. [2] (No AXLE credit)

CHEM 291b. Readings for Honors. Open only to students in the departmental honors program. Continuation of 291a, with emphasis on research planned. [2] (No AXLE credit)

CHEM 292a. Honors Research. Open only to students in the departmental honors program. Original research supervised by research adviser, to be reported in thesis form with oral examination thereon. [2] (No AXLE credit)

CHEM 292b. Honors Research. Open only to students in the departmental honors program. Original research supervised by research adviser, to be reported in thesis form with oral examination thereon. [2] (No AXLE credit)

CHEM 292c. Honors Research. Open only to students in the departmental honors program. Original research supervised by research adviser, to be reported in thesis form with oral examination thereon. [2] (No AXLE credit)

CHEM 295a. Advanced Integrated Laboratory. Multidisciplinary laboratory projects. Experimental design, synthetic techniques, chemical analysis, spectroscopy, and computational methods. Offered on a graded basis only. Limited to senior majors. Prerequisite: 210, 212a. [3] (No AXLE credit)

CHEM 295b. Advanced Integrated Laboratory. Continuation of 295a. Offered on a graded basis only. Limited to senior majors. Prerequisite: 295a. [3] (No AXLE credit)

Chinese

CHIN 200a. Basic Chinese. Designed exclusively for students with no previous exposure to the language. The basic pronunciation, grammar, and writing system of Mandarin Chinese. Simple conversation, the pinyin romanization system, basic Chinese characters, and cultural elements embedded in the language. No credit for students who have completed 201 or a more advanced Chinese language course. [3] (No AXLE credit)

CHIN 200b. Basic Chinese. Continuation of 200a. No credit for students who have completed 201 or a more advanced Chinese language course. Prerequisite: 200a. [3] (No AXLE credit)

CHIN 201. Elementary Chinese I. Introduction to Modern Chinese pronunciation, grammar, conversation, reading, and writing. For students with no previous exposure to the language. No credit for students who have earned credit for 200b or a more advanced Chinese language course. Prerequisite: 200b or 201. [5] (INT)

CHIN 211. Intermediate Chinese I (Formerly 214). Language training in oral and written Chinese. Serves as repeat credit for 214. No credit for students who have earned credit for a more advanced Chinese language course. Prerequisite: 202. [5] (INT)

CHIN 212. Intermediate Chinese II (Formerly 216). Continuation of 211. Language training in oral and written Chinese. Serves as repeat credit for 216. No credit for students who have earned credit for a more advanced Chinese language course. Prerequisite: 211. [5] (INT)

CHIN 225. Chinese for Heritage Learners I. Intended for students who have some informal training in listening and speaking Mandarin Chinese. Basic literacy and other aspects of language proficiency. Offered on a graded basis only. No credit for students who have earned credit for a more advanced Chinese language course. Prerequisite: 225. [3] (INT)

CHIN 226. Chinese for Heritage Learners II. Continuation of 225. Intended for students who have some informal training in listening and speaking Mandarin Chinese. Basic literacy and other aspects of language proficiency. Offered on a graded basis only. No credit for students who have earned credit for a more advanced Chinese language course. Prerequisite: 225. [3] (INT)


CHIN 241. Advanced Chinese I. Readings in Chinese culture to enhance proficiency in oral and written Chinese. No credit for students who have earned credit for a more advanced Chinese language course. Prerequisite: 212. [3] (INT)

CHIN 242. Advanced Chinese II. Continuation of 241. Readings in Chinese culture to enhance proficiency in oral and written Chinese. No credit for students who have earned credit for a more advanced Chinese language course. Prerequisite: 241. [3] (INT)

CHIN 251. Readings in Modern Chinese Media. Books, newspapers, Internet, and television documents and productions pertaining to political, social, and economic issues in China, including foreign trade-related issues. Prerequisite: 242. [3] (INT)

CHIN 252. Readings in Modern Chinese Media. Continuation of 251. Books, newspapers, Internet, and television documents and productions pertaining to political, social, and economic issues in China, including foreign trade-related issues. Prerequisite: 242. [3] (INT)
CHIN 255. Business Chinese I. Language skills for listening, speaking, reading, and writing in business environments. Modern China from economi-
cic and business perspectives. No credit for students who have earned credit
for a more advanced Chinese language course. Prerequisite: 242. [3] (INT)

CHIN 256. Business Chinese II. Continuation of 255. Language skills for
listening, speaking, reading, and writing in business environments. Modern
China from economic and business perspectives. Prerequisite: 255. [3] (INT)

CHIN 289a. Independent Study. Designed primarily for majors who want
to study Chinese not regularly offered in the curriculum. Must have consent
of instructor. May be repeated for a total of 12 credits in 289a and 289b
combined if there is no duplication in topic, but students may earn only up
to 3 credits per semester of enrollment. [1-3; maximum 12 credits total for
all semesters of CHIN 289a and 289b] (No AXLE credit)

CHIN 289b. Independent Study. Designed primarily for majors who want
to study Chinese not regularly offered in the curriculum. Must have consent
of instructor. May be repeated for a total of 12 credits in 289a and 289b
combined if there is no duplication in topic, but students may earn only up
to 3 credits per semester of enrollment. [1-3; maximum 12 credits total for
all semesters of CHIN 289a and 289b] (No AXLE credit)

Classics

CLAS 115F. First-Year Writing Seminar. Topics Vary. [3]

CLAS 130. Greek Civilization. A survey of the history and achievements
of Greece from its Mycenaean origins to the Roman domination. Topics
include literature, art, athletics, Periclean Athens, the conquest of Alexander,
and the Hellenistic age. [3] (INT)

CLAS 146. Roman Civilization. Ancient Roman civilization from mythical
foundations to the fall of the empire. A historical survey of topics including art
and architecture, city life, agriculture, religion, law, slavery, public entertain-
ment, and literature. [3] (INT)

CLAS 150. The Greek Myths. A study of the nature of the Greek myths,
with consideration of the related Near Eastern myths and the early history of
myths in Greece. Both the divine and the heroic myths, with some attention
to the development of these myths in Italy and to their influence upon art
and literature. [3] (HCA)

CLAS 204. Archaic and Classical Greek Art and Architecture, 1000
to 400 B.C.. Sculpture, vase painting, architecture, and the minor arts from
about 1000 B.C. to the late fifth century B.C. Formal and stylistic developments
in relation to changing cultural background. No credit for students who have completed 227. Serves as repeat credit for students who have
completed HART 257. [3] (HCA)

CLAS 205. Late Classical Greek and Hellenistic Art and Architecture.
Sculpture, vase painting, architecture, and the minor arts from after the Par-
thenon to the Roman Empire. A focus on those media (wall painting and mosaic) that develop significantly in this period. Serves as repeat credit for students who have completed HART 258. [3] (HCA)

CLAS 206. Roman Art and Architecture. Sculpture, architecture, and
painting from the tenth century B.C. to the early fourth century A.D. Daily life
of the Romans as seen in the towns of Pompeii and Herculaneum. No credit
for students who have completed 228. Serves as repeat credit for students who have completed HART 260. [3] (HCA)

CLAS 207. History of the Ancient Near East. From the neolithic period
to the conquests of Alexander the Great, in the geographical area from Persia
to Troy and Egypt. Special attention to the history of Israel. [3] (INT)

CLAS 208. History of Greece to Alexander the Great. The Greek world
from the beginning of the Mycenaean Age (1650 B.C.) to the end of the
Classical period. Special attention to the relationship between political his-
tory and the development of Hellenism. [3] (INT)

CLAS 209. Greece and the Near East from Alexander to Theodo-
sius. From Alexander’s conquest of the Persian Empire to the ascendency
of Christianity in the late fourth century. Emphasis on social, cultural and
religious transformations, within the framework of political history. [3] (INT)

CLAS 211. The Greek City. The example of ancient Athens. The stoa,
the theatre, the house, and fortifications. Institutions such as the courts,
the public assembly, and the family. Literary, historical, archaeological, and
philosophical sources. Serves as repeat credit for students who have com-
pleted HART 263. [3] (SBS)

CLAS 212. History of the Roman Republic. The growth and evolution of
the Roman world, from the foundation of the city in the seventh century B.C.
to the reign of Caesar Augustus. The Romans’ unification of Italy, conquest
of the Mediterranean and western Europe, adoption of Hellenism, and over-
throw of the Republic. [3] (INT)

CLAS 213. History of the Roman Empire. The Roman world from Au-
gustus to the collapse of the western empire in the fifth century. Political,
military, social, and religious history. Special attention given to problems
arising from use of the primary sources as well as to controversies in mod-
ern scholarship. [3] (INT)

CLAS 220. Women, Sexuality, and the Family in Ancient Greece and
Rome. The status and role of women, law and the regulation of the private
sphere, sexuality and gender roles, demography and family structure, mar-
riage, children, religion, domestic architecture and the household economy,
ancient critiques of the family, and the impact of Christianity. [3] (SBS)

CLAS 222. Classical Tradition in America. Influences of classical Greece
and Rome on the literature, politics, architecture, and values of the United
States from the colonial period to the present. [3] (US)

CLAS 223. From Late Antiquity to Islam. The Eastern Roman Empire
from Constantine to the Arab conquests. Political, social, cultural, and re-
ligious history, including monasticism, barbarian invasions, and the chang-
ing roles of the Emperor and Church. Special attention to developments in
urban life and landscape. [3] (INT)

CLAS 224. The Ancient Origins of Religious Conflict in the Middle
East. Religious oppositions in the eastern Mediterranean world from the
Maccabean revolt to the Muslim conquests of the seventh century; begin-
nings of religious militancy; challenges of monotheism to Greco-Roman civi-
lization; conversion, persecution, and concepts of heresy and holy war in
Christianity, Judaism, and Islam. [3] (P)

CLAS 225. Humor, Ancient to Modern. Ancient comic forms juxtaposed
with modern theories of humor. Aristophanic Old Comedy, New Comedy,
and Satire. Modern parallels. [3] (HCA)

CLAS 226. Warfare in the Ancient Mediterranean. Continuity and
change in ancient Greek and Roman warfare 800 B.C. to A.D. 120. Social,
political, and religious aspects of war. Effects of war, imperialism, and milita-
rism on internal and external populations. [3] (INT)

CLAS 231. Akkadian. Introduction to the cuneiform script and to the gram-
mar of Akkadian, the language of ancient Mesopotamia. Selected readings
in Old Babylonian (CODEX Hammurabi, Mari letters) and Neo-Assyrian texts
(Creation Poem, Gilgamesh Epic). [3] (INT)

CLAS 232. Akkadian. Continuation of 231. Introduction to the cuneiform
script and to the grammar of Akkadian, the language of ancient Mesopota-
ia. Selected readings in Old Babylonian (CODEX Hammurabi, Mari letters)
and Neo-Assyrian texts (Creation Poem, Gilgamesh Epic). [3] (INT)

CLAS 236. Culture of the Ancient Near East. A survey of highly sophis-
ticated Near East cultures of the last three millennia before the common era
(B.C.). Discussion of political histories, and the social, religious, and intel-
lectual heritage of Mesopotamia, Egypt, and Anatolia through excavated
artifacts and written documents. [3] (INT)

CLAS 238. The Amarna Age. The Amarna period from the sixteenth
through the twelfth centuries B.C.E., as illuminated by excavations of palaces
and temples in Egypt, Anatolia, Canaan, and Mesopotamia as well as the
vast historical, legal, and literary documents of the period. Focus on the
internationalism and theological speculation of the period as seen through
the powerful personalities and accomplishments of leaders such as Thut-
mose III, Suppiluliumas, Ramses II, and the spiritually influential Akehnaten.
[3] (INT)

CLAS 240. The Trojan War in History, Art, and Literature. Representa-
tions in Classical Greek art, literature, and archaeological evidence. The