

Fiscal Unit/Academic Org	Chemistry - D0628
Administering College/Academic Group	Arts and Sciences
Co-administering College/Academic Group	
Semester Conversion Designation	New Program/Plan
Proposed Program/Plan Name	Vision Science
Type of Program/Plan	Undergraduate bachelors degree program or major
Program/Plan Code Abbreviation	VISSCI
Proposed Degree Title	Bachelor of Science

Credit Hour Explanation

Program credit hour requirements		A) Number of credit hours in current program (Quarter credit hours)	B) Calculated result for 2/3rds of current (Semester credit hours)	C) Number of credit hours required for proposed program (Semester credit hours)	D) Change in credit hours
Total minimum credit hours required for completion of program				132	
Required credit hours offered by the unit	Minimum			18	
	Maximum			18	
Required credit hours offered outside of the unit	Minimum			114	
	Maximum			114	
Required prerequisite credit hours not included above	Minimum				
	Maximum				

Program Learning Goals

Note: these are required for all undergraduate degree programs and majors now, and will be required for all graduate and professional degree programs in 2012. Nonetheless, all programs are encouraged to complete these now.

- Program Learning Goals**
- Students have the biological, mathematical, and physical sciences knowledge to pursue research in the field of Vision Science.
 - Students marshal the conceptual and methodological tools needed to solve problems in the field of Vision Science.
 - Students demonstrate an understanding of the ethical implications of their chosen methodologies and conduct research responsibly.

Assessment

Assessment plan includes student learning goals, how those goals are evaluated, and how the information collected is used to improve student learning. An assessment plan is required for undergraduate majors and degrees. Graduate and professional degree programs are encouraged to complete this now, but will not be required to do so until 2012.

Is this a degree program (undergraduate, graduate, or professional) or major proposal? Yes

Does the degree program or major have an assessment plan on file with the university Office of Academic Affairs? No

DIRECT MEASURES (means of assessment that measure performance directly, are authentic and minimize mitigating or intervening factors)

Standardized tests

- National standardized examination

Classroom assignments

- Other classroom assessment methods (e.g., writing assignments, oral presentations, oral exams)

Direct assessment methods specifically applicable to graduate programs

- Candidacy exams

INDIRECT MEASURES (means of assessment that are related to direct measures but are steps removed from those measures)**Surveys and Interviews**

- Student survey

Additional types of indirect evidence

- Job or post-baccalaureate education placement
- Comparison or benchmarking

USE OF DATA (how the program uses or will use the evaluation data to make evidence-based improvements to the program periodically)

- Analyze and discuss trends with the unit's faculty
- Analyze and report to college/school
- Make improvements in curricular requirements (e.g., add, subtract courses)
- Make improvements in course content
- Periodically confirm that current curriculum and courses are facilitating student attainment of program goals

Program Specializations/Sub-Plans

If you do not specify a program specialization/sub-plan it will be assumed you are submitting this program for all program specializations/sub-plans.

Pre-Major

Does this Program have a Pre-Major? No

Attachments

- BSVS Sample Curriculum rev 11-23-15.xlsx: Sample 4-Year Plan
(Other Supporting Documentation. Owner: Haddad,Deborah Moore)
- Appendix Submission Template.docx: Required Courses
(List of Semester Courses. Owner: Haddad,Deborah Moore)
- BSVS Admission to OPT.docx: Response to NMS Panel Questions
(Other Supporting Documentation. Owner: Haddad,Deborah Moore)

Comments

- Sent back to D. Haddad. *(by Vankeerbergen,Bernadette Chantal on 01/21/2016 11:11 AM)*
- This is not a new program.

The VISSCI-BS had been an ASC program under the quarter system that had been overlooked during semester conversion. This submission is a direct conversion of the quarter-system program to the current semester system.

(by Haddad,Deborah Moore on 10/20/2015 01:45 PM)

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Haddad,Deborah Moore	10/20/2015 01:56 PM	Submitted for Approval
Approved	Gustafson,Terry Lee	10/20/2015 02:42 PM	Unit Approval
Approved	Haddad,Deborah Moore	10/20/2015 03:44 PM	College Approval
Revision Requested	Vankeerbergen,Bernadette Chantal	01/21/2016 11:11 AM	ASCCAO Approval
Submitted	Haddad,Deborah Moore	11/14/2016 08:06 PM	Submitted for Approval
Approved	Haddad,Deborah Moore	11/14/2016 08:07 PM	Unit Approval
Approved	Haddad,Deborah Moore	11/14/2016 08:07 PM	College Approval
Pending Approval	Nolen,Dawn Vankeerbergen,Bernadette Chantal Hanlin,Deborah Kay Jenkins,Mary Ellen Bigler Hogle,Danielle Nicole	11/14/2016 08:07 PM	ASCCAO Approval

**PROPOSED SEMESTER CONVERSION OF VISION SCIENCE, BS
PREREQUISITES AND DESCRIPTIONS OF REQUIRED COURSES**

Course	Description	Cr. Hrs.	Prereq(s)
BIOCHEM 4511: <i>Introduction to Biological Chemistry</i>	An introductory course in biochemistry dealing with the molecular basis of structure, metabolism, genetic replication, transcription, and translation in plants, animals, and microorganisms.	4	Chem 1220 (123) or 1250 (125), and 2510 (252) or 2310 (231), and one semester of Biological Sciences; or permission of instructor.
BIOLOGY 1113: <i>Biological Sciences: Energy Transfer and Development</i>	Exploration of biology and biological principles; evolution and the origin of life, cellular structure and function, bioenergetics, and genetics.	4	Math 1130 (130), 1148, 1150, or above, or Math Placement Level L or M. Prereq or concur: Chem 1110 (101), 1210 (121), 1610, or 1910H (201H)
BIOLOGY 1114: <i>Biological Sciences: Form, Function, Diversity, and Ecology</i>	Exploration of biology and biological principles; evolution and speciation, diversity in structure, function, behavior, and ecology among prokaryotes and eukaryotes.	4	Math 1130 (130), 1148, or 1150 or above, or Math Placement Level L or M. Prereq or concur: Chem 1110 (101), 1210 (121), 1610, or 1910H (201H)
CHEM 1210: <i>General Chemistry I</i>	First course for science majors, covering dimensional analysis, atomic structure, the mole, stoichiometry, chemical reactions, thermochemistry, electron configuration, bonding, molecular structure, gases, liquids, and solids.	5	One unit of high school chemistry, and Math Placement Level L or M; or a grade of C- or above in Math 1130 (130), 1131 (131), 1148 (148), 1150 (150), or above.
CHEM 1220: <i>General Chemistry II</i>	Continuation of 1210 for science majors, covering solutions, kinetics, chemical equilibrium, solubility and ionic equilibria, qualitative analysis, thermodynamics, electrochemistry, descriptive chemistry, coordination compounds, and nuclear chemistry.	5	1210, 1215, 1250, 1610 (162), 1910H (202H), or 122, and Math Placement Level L or M; or a grade of C- or above in Math 1130 (130), 1131 (131), 1148 (148), or 1150 (150), or above.
CHEM 2510: <i>Organic Chemistry I</i>	Introduction to structure, nomenclature, physical properties, preparation and reactions of alkanes, alkenes, alkynes, alcohols, ethers, epoxides, aldehydes and ketones. Other topics include stereochemistry, acids, bases, and reaction mechanisms.	4	1220 (123), 1620 or 1920H (203H).
MATH 1151: <i>Calculus I</i>	Differential and integral calculus of one real variable.	5	A grade of C- or above in 1148 and 1149, or in 1144, 1150, or 150, or Math Placement Level L.
MICRBIO 4000: <i>Basic and Practical Microbiology</i>	Provides an understanding of microorganisms and their interaction with the human experience.	4	3 cr hrs in Biology.
PHYSICS 1200: <i>Mechanics, Kinematics, Fluids, Waves</i>	Algebra-based introduction to classical physics: Newtons laws, fluids, waves.	5	A grade of C- or above in Math 1148 (148), or Math Placement Level M.
PHYSICS 1201: <i>E&M, Optics, Modern Physics</i>	Algebra-based introduction to electricity and magnetism, simple optics, overview of modern physics including special	5	1200 (111).

	relativity and quantum mechanics.		
PHYSIO 3200: Human Physiology	Teaches the physiology of human organ systems, including the following: nervous system, muscle, gastrointestinal, cardiovascular, respiratory, renal, endocrine, and reproductive systems.	5	6 sem cr hrs in the biological sciences.
PSYCH 1100: Introduction to Psychology	A broad survey of psychological science. Application of the scientific method to the empirical study of behavior with emphasis on individual and cultural differences.	3	N/A
STATS 2450: Introduction to Statistical Analysis I	Calculus-based introduction to statistical data analysis. Includes sampling, experimental design, probability, binomial and normal distributions, sampling distributions, inference, regression, ANOVA, two-way tables.	3	Math 1131, 1151 (152.xx), 1156, 1161.xx, or 1181H, or equiv.
VISSCI 6100: General and Histological Anatomy	Gross and microscopic anatomy of the body with emphasis on head and neck anatomy and organ systems.	4	1st yr standing in Optometry.
VISSCI 6110: General and Visual Neuroanatomy	Anatomy of the central and peripheral nervous system with special emphasis on autonomic system and anatomy of the visual system.	4	1st yr standing in Optometry.
VISSCI 6130: Pathophysiology I	Provides a comprehensive introduction to pathology, including: inflammation, genetic disease, and neoplasia. Pathophysiology of blood, GI, endocrine, and respiratory systems will be examined in detail.	5	1st yr standing in Optometry.
VISSCI 6140: Pathophysiology II	The pathophysiology of the nervous system, muscle systems, cardiovascular, renal, and immune systems. Students will integrate information from VisSci 6130.	5	1st yr standing in Optometry.
VISSCI 6160: Biochemistry for Optometry	This course is designed to help optometry students integrate biochemistry with concepts related to ocular pathology, and therapeutic treatment.	1	1st yr standing in Optometry.
VISSCI 6170: Microbiology for Optometry	This course is designed to help optometry students integrate microbiology with concepts related to ocular pathology, and therapeutic treatment.	1	1st yr standing in Optometry.
VISSCI 6500: Geometric Optics	Vergence, ray tracing and image formation. Refracting and reflecting surfaces, lenses, prisms, model eyes. Magnification, apertures and stops, astigmatism, prismatic effects of lenses, aberrations.	5	1st yr standing in Optometry.
VISSCI 6520: Optics of the Eye	Optics of ametropias and their correction, classification and etiology of refractive errors, schematic eyes, retinal image size, optics of clinical instruments, optics of accommodation, aberrations of the eye.	4	1st yr standing in Optometry.
VISSCI 6540: Physical Optics and Photometry	Principles of photometry and colorimetry; light sources; diffraction, polarization, interference, electromagnetic waves, quantum optics, lasers.	3	1st yr standing in Optometry.
VISSCI 6700: Ocular Anatomy	Human gross anatomy of the head and neck with special emphasis on the eye and orbit; histology and embryology of the eye and associated structures.	4	1st yr standing in Optometry.
VISSCI 6720: Ocular Physiology	Functions and organic processes of the components of the eye and surrounding structures.	3	1st yr standing in Optometry.

BSVS PROGRAM REQUIRED CREDIT HOURS	
BSVS Major Courses	25 hours
ASC GE Courses	68 hours
Optometry Courses	39 hours
Total Minimum Hours	132 Hours

RESPONSES TO ASCC NMS PANEL 01/21/2016 REVISION REQUEST

➤ INFORMATION ABOUT THE REQUIREMENTS TO ENTER THE PROGRAM AND TO COMPLETE IT.

Requirements for Admission to the College of Optometry

- Completion of three or more years of undergraduate work, with preference given to those with an earned bachelor's degree.
- Complete all stated prerequisite courses with a grade of C- or better.
- Complete at least 10 hours of observation at a minimum of two different optometric practice setting.
- Submit OptomCAS application between July 1 and March 31.
- Submit official transcripts from all post-secondary institutions attended, via OptomCAS.
- Submit a minimum of three letters of recommendation via OptomCAS. One must be from an optometrist, one must be from a professor, and the third letter is from someone of your choice.
- Complete the Optometry Admission Test (OAT) by March 31. Be sure to notify our office if you have retaken the test.
- After we receive your submitted OptomCAS application, you will be invited via email to file The Ohio State Optometry Supplemental Application.
- Complete an in person interview with the College of Optometry Admissions Committee.
- To ensure that you have satisfactory functional skills to provide optometric care, you must meet functional guidelines established by the Association of Schools and Colleges of Optometry (ASCO).

Prerequisite Courses for The Ohio State University College of Optometry

Admission to the OSU College of Optometry requires completion of the prerequisites listed below or their equivalents from any accredited college or university. At least one year of this preparatory work should be completed at a baccalaureate degree-granting institution. Applicants must have completed three or more years of undergraduate work, and preference will be given to those with an earned bachelor's degree. The number of courses is provided as a guideline. In assessing course content for equivalency, actual numbers of courses may vary for your institution. In some cases multiple courses may be needed to fulfill prerequisite coursework.

Courses Prerequisite to Admission to the Vision Science Program, College of Optometry	# of OSU Courses	Current OSU Course Numbers
English Composition	1	1110
Inorganic Chemistry, with laboratory	2	1210 & 1220
Organic Chemistry, no laboratory required	1	2510
Biochemistry If your institution divides biochemistry into a two series course, you need to take both courses to meet our course content requirements.	1 or 2	4511
Physics, with laboratory Physics course work should cover mechanics, heat, light, sound, electricity, magnetism and modern physics.	2	1200 & 1201
Mathematics - Calculus	1	1151
Biology, with laboratory	2	1113 & 1114
Physiology Physiology course work must cover all of the systems of the body. Unless you took physiology at Ohio State, you must send your physiology course syllabus materials to our office for evaluation at syllabus@optometry.osu.edu	1 or 2	3200

Microbiology, with laboratory	1	4000
Introductory Psychology	1	1100
Humanities	2-3	
Social Sciences	2-3	

Additional Recommended Courses

Additional courses in physiology and anatomy are highly recommended. Other beneficial electives may include: introductory statistics, ethics, histology, sociology, scientific terminology, and small business management.

Optometry Admission Test

The Optometry Admissions Test (OAT) is an assessment of your academic ability and knowledge in six sections: biology, chemistry, organic chemistry, physics, math (quantitative), and reading comprehension.

The OAT is offered throughout the year at Prometric Testing Centers. You should plan ahead for taking the OAT and schedule a testing date several weeks in advance. Information about registering for the test can be found at: <http://www.opted.org/>. Please note that you must register with OAT before you can contact a Prometric Testing Center for a testing date. You must have your official scores sent to OSU College of Optometry directly from OAT as we cannot accept copies of your score report from Prometric. Scores are good for two years and are generally sent to the college within two weeks of your test date. You must submit your OAT scores by the March 31st preceding the autumn term for which you are applying.

The OAT can be retaken once every 90 days. In addition to registration instructions and materials, the OAT website (<http://www.opted.org/>) also provides a tutorial, test preparation materials, and a sample test. You will receive an individual score for each of the sections as well as an Academic Average score (the average score for all six sections) and a Total Science score (a recalculation of the science sections only). The test is scored from 200 (minimum score) to 400 (maximum score).

Knowledge of the Profession

In order to gain valuable information about the practice of optometry, applicants must complete a minimum of 10 hours of observation in at least two different types of optometric settings. Email Admissions for contact information on optometrists in your local area.

- **WEBSITE SAYS THAT STUDENTS “MAY CHOOSE TO WORK TOWARD THEIR BACCALAUREATE DEGREE WITH DISTINCTION.” D. HADDAD TO CHECK WITH ASC HONORS TO SEE WHAT THAT MEANS UNDER CURRENT REQUIREMENTS.**

Students may choose to complete the baccalaureate *with honors* in the Arts and Sciences, or *with research distinction*.

- **VALID PROGRAM GOALS**

Program Learning Goals

N.B.: The Vision Science program is a graduate program and is not the professional program to educate optometrists..

- Students have the biological, mathematical, and physical sciences knowledge to pursue research in the field of Vision Science.
- Students marshal the conceptual and methodological tools needed to solve problems in the field of Vision Science.

- Students demonstrate an understanding of the ethical implications of their chosen methodologies and conduct research responsibly.
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➤ **LETTER OF SUPPORT FROM ASC EXECUTIVE DEAN**