CURRICULUM GUIDE
2012-2013

NATURAL SCIENCE

Associate in Arts in Natural Science

The Associate in Arts in Natural Science has three areas of emphasis: Biological Science; Physical Science; and Mathematics and Technology. Students may choose one of these emphases to earn a degree in Natural Science. These emphases will provide students with the knowledge and skills to succeed in a variety of science or technological careers. Graduates with an Associate in Arts in Natural Science will develop a strong foundation in the life sciences, physical sciences, and mathematics. Furthermore, the theoretical knowledge and laboratory skills acquired by students in these programs will also enhance their success with obtaining entry-level jobs that require two years of college-level science and math.

It is imperative that students entering Ohlone’s Associate in Arts in Natural Science meet with a counselor at the start of their academic work. Counselors will assist students in preparing a Student Education Plan that will prepare them to pursue their academic goals.

Requirements for Associate in Arts Degree:

a) Complete the Required Degree Courses with a grade of C or better.

b) Complete a minimum of twenty transferable units selected from one of the areas of emphasis, including a minimum of twelve units in the same department and an additional eight units from any of the courses within the emphasis.

c) Complete Plan A, B, or C General Education requirements. These requirements are specified in the Ohlone College catalog. Students who do not intend to transfer may complete Plan A; students who intend to transfer may complete either Plan B or C. Counselors will advise students on the general education plan that best prepares them for pursuing an associate degree and/or transfer.

d) Complete at least 60 degree-applicable units with a 2.0 grade point average.

e) Complete at least 12 units at Ohlone College.

f) Complete at least 50% of the required degree courses at Ohlone College.

Student Learning Outcomes

1. Gain knowledge and skills to succeed in a variety of science or technological careers.

2. Gain knowledge and skills to succeed in science majors at a four-year university.
Required Degree Courses

Biological Science Emphasis

This emphasis will enable students to develop a strong foundation in the life sciences. Furthermore, the theoretical knowledge and laboratory skills acquired by students in this emphasis will also enhance their success with obtaining entry-level jobs that require two years of college-level life science and laboratory skills.

Choose a minimum of twelve units from the Biology courses listed below and an additional eight units from any of the remaining courses within this emphasis.

ANTH-101 Physical Anthropology 4
BIOL-101A Principles of Biology -- Molecular and Cellular 5
BIOL-101B Principles of Biology -- Organisms and Systems 5
BIOL-103A Human Anatomy and Physiology 4
BIOL-103B Human Anatomy and Physiology 4
BIOL-104 Basic Human Anatomy and Physiology 4
BIOL-105 Heredity, Evolution, and Society 3
BIOL-106 Microbiology 5
BIOL-107 Microbiology and Infectious Diseases 3
BIOL-108 Human Ecology 3
BIOL-109 Biology of Sexual Reproduction 3
BIOL-114 Introduction to Plant Biology 3
BIOL-130 Introduction to Biology 4
BIOL-140 Sierra Nevada Natural History 3
BIOL-141 Marine Biology 3
BIOL-142 Environmental Biology 4
BIOT-100 Biotechnology and Society 3
BIOT-105 Introduction to Cell and Molecular Biology 4

Total Required Units 20

Physical Science Emphasis

This emphasis will enable students to develop a strong foundation in the physical sciences. Furthermore, the theoretical knowledge and laboratory skills acquired by students in this emphasis will also enhance their success with obtaining entry-level jobs that require two years of college-level physical science and laboratory skills.

Choose a minimum of twelve units from either the Chemistry, Geology, or Physics courses listed below and an additional eight units from any of the remaining courses within this emphasis.

ASTR-101A General Astronomy of the Solar System 3
ASTR-101B General Astronomy Beyond the Solar System 3
ASTR-102 General Astronomy Lab 1
CHEM-101A General Chemistry 5
CHEM-101B General Chemistry 5
CHEM-102 Preparation for General Chemistry 4
CHEM-108 Survey of Chemistry 3
CHEM-109 Biochemistry for Health Science and Biotechnology 4
CHEM-112A Organic Chemistry 5
CHEM-112B Organic Chemistry 5
GEOG-101 Physical Geography 4
GEOL-101 Introduction to Geology 4
GEOL-102 Introduction to Oceanography 3
GEOL-102L Oceanography Laboratory 1
GEOL-103 Paleontology and Dinosaurs 3
GEOL-103L Earth History and Paleontology Laboratory 1
PHYS-108 Survey of Physics 3
**Mathematics and Technology Emphasis**

This emphasis will enable students to develop a strong foundation in mathematics and technology. Furthermore, the theoretical knowledge and laboratory skills acquired by students in this emphasis will also enhance their success with obtaining entry-level jobs that require two years of college-level mathematics and technology courses. Classes prepare students for technical careers such as in information technology, systems administration, and networking.

Choose a minimum of twelve units in the same department, a minimum of three units in Mathematics, and a minimum of three units in technology (CS or CNET).

- CNET-105 PC Hardware and Software 4
- CNET-114 How Technology Works 4
- CNET-115 Introduction to Robotics and Automated Systems 4
- CNET-150 Network Operating Systems 4
- CNET-170 Network Security 4
- CS-101 Introduction to Computers and Information Technology 3
- CS-102 Introduction to Computer Programming Using C++ 4
- CS-104A Introduction to .NET Programming 4
- CS-104B Advanced .NET Programming 4
- CS-104D Web Services for .NET 4
- CS-116 Object-Oriented Programming Using C++ 4
- CS-118 Introduction to Assembly Language Programming 4
- CS-122 C#.NET Programming 4
- CS-124 Programming With Data Structures 4
- CS-125 Introduction to Programming Using Java 4
- CS-131 Computing Concepts in Biotechnology 4
- CS-133 Introduction to SAS Programming 3
- CS-137 Introduction to SQL 4
- CS-141B SAS Graphing and ODS 2
- CS-143 Advanced SAS Programming 3
- CS-146 Introduction to UNIX/Linux 3
- CS-147 UNIX/Linux Shell Scripting 4
- CS-149 PERL Programming 4
- CS-152 Data Communications 2
- CS-157 TCP/IP and Internetworking 3
- CS-160A Computer Graphics I 4
- CS-160B Computer Graphics II 4
- CS-162 XHTML 4
- CS-170 Java Programming 4
- CS-175 From JavaScript to AJAX 4
- CS-178 XML 3
- MATH-101A Calculus with Analytic Geometry 5
- MATH-101B Calculus with Analytic Geometry 5
- MATH-101C Calculus with Analytic Geometry 5
- MATH-103 Introduction to Linear Algebra 3
- MATH-104 Differential Equations 5
- MATH-111 Introduction to Matlab 3
- MATH-159 Introduction to Statistics 5
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>MATH-163</td>
<td>Discrete Mathematics for Computers</td>
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<td>MATH-166</td>
<td>Finite Mathematics</td>
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<td>MATH-167</td>
<td>Calculus for Business and Social Science</td>
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<tr>
<td>MATH-181</td>
<td>Trigonometry</td>
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<td>MATH-188</td>
<td>Pre-Calculus</td>
<td>5</td>
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Total Required Units 20