



CURRICULUM GUIDE 2011-2012

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.

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.

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| 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 |
| CHEM-101A | General Chemistry | 5 |
| CHEM-102 | Preparation for General Chemistry | 4 |
| CHEM-106A | Principles of Chemistry | 4 |
| CHEM-109 | Biochemistry for Health Science and Biotechnology | 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.

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| 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-106A | Principles of Chemistry | 4 |
| CHEM-106B | Principles of 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 |

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| 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 |
| PHYS-120 | Introduction to Physics I | 4 |
| PHYS-120A | Introduction to Physics – Calculus Supplement | 1 |
| PHYS-121 | Introduction to Physics II | 4 |
| PHYS-121A | Introduction to Physics II – Calculus Supplement | 1 |
| PHYS-140 | Mechanics | 4 |
| PHYS-141 | Electricity and Magnetism | 4 |
| PHYS-142 | Optics, Heat, and Modern Physics | 4 |
| | Total Required Units | 20 |

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).

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| 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 |
| CNET-171 | Information Security | 3 |
| 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-113 | Discrete Mathematics for Computers | 3 |
| 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-169A | Digital Photography | 2 |
| CS-169B | Intermediate Digital Photography | 2 |
| CS-170 | Java Programming | 4 |
| CS-175 | From JavaScript to AJAX | 4 |

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| CS-176 | Introduction to PERL CGI Programming Development | 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-156 | Math for Liberal Arts | 3 |
| MATH-159 | Introduction to Statistics | 5 |
| MATH-163 | Discrete Mathematics for Computers | 3 |
| MATH-166 | Finite Mathematics | 4 |
| MATH-167 | Calculus for Business and Social Science | 5 |
| MATH-181 | Trigonometry | 3 |
| MATH-188 | Pre-Calculus | 5 |
| | Total Required Units | 20 |