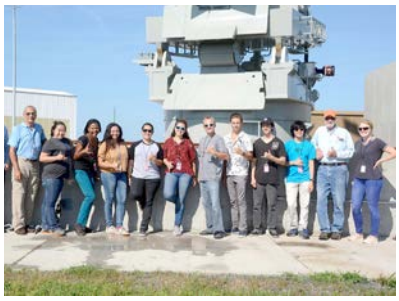
NATURAL SCIENCES (NS)



Liaison: Mario Mediati (845-9201, mediati@hawaii.edu)

Faculty: Liberal Arts Faculty in Math, Sciences and other disciplines

Program Mission: The Associate of Science in Natural Sciences degree program will prepare students to transfer to baccalaureate STEM (Science, Technology, Engineering and Mathematics) programs with recognized and supported pathways.

Program Description: The Associate of Science in Natural Sciences (AS-NS) degree is designed for students planning to transfer to a science, technology, engineering or mathematics (STEM) baccalaureate degree program at a four-year institution in Hawai'i or on the U.S. mainland.

Program Learning Outcomes (PLOs): Upon successful completion of the AS in Natural Sciences, students will be able to:

- Analyze data effectively using the most currently available technology.
- Communicate scientific ideas and principles clearly and effectively.
- Analyze and apply fundamental mathematical, physical and chemical concepts and techniques to scientific issues.
- Apply fundamental concepts and techniques in their chosen field of study, such as biology, chemistry, geology, and engineering.

Program Requirements: Natural Science AS Degree - Biological Sciences Concentration

Program Prerequisites: *ENG 100 or ESL 23, OR Placement in ENG 100; MATH 25 or Placement in MATH 103*

Recommended Prep: *Summer Bridge program to complete MATH 103 prior to program entry*

General Education Courses	AS Credits
Foundations Requirements **:	
ENG 100 - Composition I (FW)	*3*
MATH 241 - Calculus I (FQ)	*4*
Two courses from FGA, FGB, FGC	*6*
Diversification Requirements **:	
Select three Diversification courses below; two courses should also satisfy the Writing Intensive (WI) Focus Requirement, and one course should also satisfy the HAP Focus Requirement. Select an additional 3 credits if the DB/DP course is used to fulfill an Elective requirement, to satisfy the total minimum of 60 credits required for this degree.	
One course from DA, DH, DL	*3*
One course from DS	*3*
One course from DB or DP	*3*
	22

Core Requirements*	AS Credits
BIOL 171 - Introduction to Biology I	*3*
BIOL 171L - Introduction to Biology I Lab	*1*
BIOL 172 - Introduction to Biology II	*3*
BIOL 172L - Introduction to Biology II Lab	*1*
CHEM 161 - General Chemistry I	*3*
CHEM 161L - General Chemistry I Lab	*1*
CHEM 162 - General Chemistry II	*3*
CHEM 162L - General Chemistry II Lab	*1*
PHYS 151 - College Physics I or PHYS 170 - General Physics I	*3-4*
PHYS 151L - College Physics I Lab or PHYS 170L - General Physics I Lab	*1*

PHYS 152 - College Physics II or PHYS 272 - General Physics II	*3*
PHYS 152L - College Physics II Lab or PHYS 272L - General Physics II Lab	*1*
	24-25

Electives*	**AS Credits**
Choose 13-14 credits from the following electives, appropriate to Degree Concentration and intended baccalaureate pathway: • *AG 100 - Introduction to Agricultural Sciences (3)* • *BIOC 141 - Fundamentals of Biochemistry (3)* • *BIOC 142 - Elements of Biochemistry (3)* • *BIOL 123 - Hawaiian Environmental Science (3)* • *BIOL 124 - Environment and Ecology (3)* • *BIOL 124L - Environment and Ecology Lab (1)* • *BOT 101 - General Botany (3)* • *BOT 101L - General Botany Lab (1)* • *BOT/HWST 105 - Mea Kanu: Hawaiian Plants and their Uses (3)* • *BOT 130 - Plants in the Hawaiian Environment (3)* • *BOT 130L - Plants in the Hawaiian Environment Lab (1)* • *GEO 101 - The Natural Environment (3)* • *GEO 101L - The Natural Environment Lab (1)* • *GG 101 - Introduction to Geology (3)* • *GG 101L - Introductory Geology Lab (1)* • *GG 103 - Geology of the Hawaiian Islands (3)* • *ATMO 101 - Introduction to Meteorology (3)* • *ATMO 101L - Introduction to Meteorology Lab (1)* • *MICR 130 - General Microbiology (3)* • *MICR 140L - General Microbiology Lab (2)* • *OCN 101 - Marine Option Program Seminar (1)* • *OCN 102 - Introduction to the Environment and Sustainability (3)* • *OCN 201 - Science of the Sea (3)* • *OCN 201L - Science of the Sea Lab (1)* • *SCI 295V - Science, Technology, Engineering, and Mathematics (STEM) Research Experience (1-3)* • *ZOOL 101 - Principles of Zoology (4)* • *ZOOL 200 - Marine Biology (3)* • *ZOOL 200L - Marine Biology Lab (1)*	*13-14*
	13-14
Minimum Credits Required	**60**

* A grade of "C" or higher must be earned in all program-required courses and science electives; minimum 2.0 GPA.

** General Education Requirements for the AA degree are listed under *DEGREES AND CERTIFICATES*.

Program Requirements: Natural Science AS Degree - Physical Sciences Concentration

Program Prerequisites: *ENG 100 or ESL 23, OR Placement in ENG 100; MATH 25 or Placement in MATH 103*

Recommended Prep: *Summer Bridge program to complete MATH 103 prior to program entry*

General Education Courses	**AS Credits**
Foundations Requirements **:	
ENG 100 - Composition I (FW)	*3*
MATH 241- Calculus I (FQ)	*4*
Two courses from FGA, FGB, FGC	*6*
Diversification Requirements **: Select three Diversification courses below; two courses should also satisfy the Writing Intensive (WI) Focus Requirement, and one course should also satisfy the HAP Focus Requirement. Select an additional 3 credits if the DB/DP course is used to fulfill an Elective requirement, to satisfy the total minimum of 60 credits required for this degree.	
One course from DA, DH, DL	*3*
One course from DS	*3*
One course from DB or DP	*3*
	22

Core Requirements*	AS Credits
CHEM 161 - General Chemistry I	*3*
CHEM 161L - General Chemistry I Lab	*1*
CHEM 162 - General Chemistry II	*3*
CHEM 162L - General Chemistry II Lab	*1*
MATH 242 - Calculus II	*4*
PHYS 151 - College Physics I *or PHYS 170 - General Physics I*	*3-4*
PHYS 151L - College Physics I Lab *or PHYS 170L - General Physics I Lab*	*1*
PHYS 152 - College Physics II *or PHYS 272 - General Physics II*	*3*
PHYS 152L - College Physics II Lab *or PHYS 272L - General Physics II Lab*	*1*
	20-21

Electives*	AS Credits
Choose 17-18 credits from the following electives, appropriate to Degree Concentration and intended baccalaureate pathway: • *AG 100 - Introduction to Agricultural Sciences (3)* • *ATMO 101 - Introduction to Meteorology (3)* • *ATMO 101L - Introduction to Meteorology Lab (1)* • *BIOC 141 - Fundamentals of Biochemistry (3)* • *BIOC 142 - Elements of Biochemistry (3)* • *BIOL 101 - Biology and Society (3)* • *BIOL 101L - Biology and Society Lab (1)* • *BIOL 123 - Hawaiian Environmental Science (3)* • *BIOL 124 - Environment and Ecology (3)* • *BIOL 124L - Environment and Ecology Lab (1)* • *BOT 101 - General Botany (3)* • *BOT 101L - General Botany Lab (1)* • *BOT/HWST 105 - Mea Kanu: Hawaiian Plants and their Uses (3)* • *BOT 130 - Plants in the Hawaiian Environment (3)* • *BOT 130L - Plants in the Hawaiian Environment Lab (1)* • *GEO 101 - The Natural Environment (3)* • *GEO 101L - The Natural Environment Lab (1)* • *GG 101 - Introduction to Geology (3)* • *GG 101L - Introductory Geology Lab (1)* • *GG 103 - Geology of the Hawaiian Islands (3)* • *MICR 130 - General Microbiology (3)* • *MICR 140L - General Microbiology Lab (2)* • *OCN 101 - Marine Option Program Seminar (1)* • *OCN 102 - Introduction to the Environment and Sustainability (3)* • *OCN 201 - Science of the Sea (3)* • *OCN 201L - Science of the Sea Lab (1)* • *SCI 295V - Science, Technology, Engineering, and Mathematics (STEM) Research Experience (1-3)* • *ZOOL 101 - Principles of Zoology (4)* • *ZOOL 200 - Marine Biology (3)* • *ZOOL 200L - Marine Biology Lab (1)*	*17-18*
	17-18

Minimum Credits Required	**60**

* A grade of "C" or higher must be earned in all program-required courses and science electives; minimum 2.0 GPA.

** General Education Requirements for the AA degree are listed under *DEGREES AND CERTIFICATES*.

Cost of Textbooks/Supplies: The cost of textbooks and supplies is approximately $300 per semester for full-time students.

Program Requirements: Natural Science AS Degree - Engineering Concentration

Program Prerequisites: *ENG 100 or ESL 23, OR Placement in ENG 100; MATH 25 or Placement in MATH 103*

Recommended Prep: *Summer Bridge program to complete MATH 103 prior to program entry*

General Education Courses	**AS Credits**
Foundations Requirements **:	
ENG 100 - Composition I (FW)	*3*
MATH 241 - Calculus I (FQ)	*4*
Two courses from FGA, FGB, FGC	*6*
Diversification Requirements **: Select three Diversification courses below; two courses should also satisfy the Writing Intensive (WI) Focus Requirement, and one course should also satisfy the HAP Focus Requirement. Select an additional 3 credits if the DB/DP course is used to fulfill an Elective requirement, to satisfy the total minimum of 60 credits required for this degree.	
One course from DA, DH, DL	*3*
One course from DS	*3*
One course from DB or DP	*3*
	22

Core Requirements *	**AS Credits**
CHEM 161 - General Chemistry I	*3*
CHEM 161L - General Chemistry I Lab	*1*
CHEM 162 - General Chemistry II	*3*
EE 160 - Programming for Engineers	*4*
MATH 242 - Calculus II	*4*
MATH 243 - Calculus III	*3*
MATH 244 - Calculus IV	*3*
PHYS 170 - General Physics I	*4*
PHYS 170L - General Physics I Lab	*1*
PHYS 272 - General Physics II	*3*
PHYS 272L - General Physics II Lab	*1*
CE 270 - Applied Mechanics I (Statics) (3) or EE 211 - Basics Circuit Analysis I (4)	*3 or 4*
	33-34

Electives*	**AS Credits**
Choose 4-5 credits from the following electives, appropriate to Degree Concentration and intended baccalaureate pathway: (*** indicates strongly recommended courses) • *AG 100 - Introduction to Agricultural Sciences (3)* • *ATMO 101 - Introduction to Meteorology (3)* • *ATMO 101L - Introduction to Meteorology Lab (1)* • *BIOC 141 - Fundamentals of Biochemistry (3)* • *BIOC 142 - Elements of Biochemistry (3)* • *BIOL 101 - Biology and Society (3)* • *BIOL 101L - Biology and Society Lab (1)* • *BIOL 123 - Hawaiian Environmental Science (3)* • *BIOL 124 - Environment and Ecology (3)* • *BIOL 124L - Environment and Ecology Lab (1)* • *BOT 101 - General Botany (3)* • *BOT 101L - General Botany Lab (1)* • *BOT/HWST 105 - Mea Kanu: Hawaiian Plants and their Uses (3)* • *BOT 130 - Plants in the Hawaiian Environment (3)* • *BOT 130L - Plants in the Hawaiian Environment Lab (1)* • *CE 270*** - Applied Mechanics I (Statics) (3)* • *CE 271*** - Applied Mechanics II (Dynamics) (3)* • *EE 211*** - Basics Circuit Analysis I (4)* • *EE 213*** - Basics Circuit Analysis II (4)* • *EE 296*** - Sophomore Project (3)* • *GEO 101 - The Natural Environment (3)* • *GEO 101L - The Natural Environment Lab (1)* • *GG 101 - Introduction to Geology (3)* • *GG 101L - Introductory Geology Lab (1)* • *GG 103 - Geology of the Hawaiian Islands (3)* • *ICS 111 - Introduction to Computer Science I - Java (4)* • *MICR 130 - General Microbiology (3)* • *MICR 140L - General Microbiology Lab (2)* • *OCN 101 - Marine Option Program Seminar (1)* • *OCN 102 - Introduction to the Environment and Sustainability (3)* • *OCN 201 - Science of the Sea (3)* • *OCN 201L - Science of the Sea Lab (1)* • *PHYS 151 - College Physics I (3)* • *PHYS 151L - College Physics I Lab (3)* • *PHYS 152 - College Physics II (3)* • *PHYS 152L - College Physics II Lab (1)* • *PHYS 274*** - General Physics III (3)* • *SCI 295V - Science, Technology, Engineering, and Mathematics (STEM) Research Experience (1-3)* • *ZOOL 101 - Principles of Zoology (4)* • *ZOOL 200 - Marine Biology (3)* • *ZOOL 200L - Marine Biology Lab (1)*	*4-5*
	4-5
Minimum Credits Required	**60**

* A grade of "C" or higher must be earned in all program-required courses and science electives; minimum 2.0 GPA.

** General Education Requirements for the AA degree are listed under *DEGREES AND CERTIFICATES*.