

# Energy Resource Engineering B.S.

## Program Requirements

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## Minimum Requirements for Energy Resource Engineering B.S.: 132 credits

Students must earn a C- grade or better in each course.

Code	Title	Credits
<b>General University Requirements</b>		
Complete the general university requirements. ( <a href="https://catalog.uaf.edu/bachelors/#gurbachelorsdegreestext">https://catalog.uaf.edu/bachelors/#gurbachelorsdegreestext</a> )		
<b>General Education Requirements</b>		
Complete the general education requirements. ( <a href="https://catalog.uaf.edu/bachelors/#generaleducationrequirementsstext">https://catalog.uaf.edu/bachelors/#generaleducationrequirementsstext</a> )		36-40
As part of the general education requirements, complete the following:		
CHEM F105X	General Chemistry I	
CHEM F106X	General Chemistry II	
MATH F251X	Calculus I	
<b>B.S. Degree Requirements</b>		
Complete the B.S. degree requirements. ( <a href="https://catalog.uaf.edu/bachelors/#bachelorofsciencetext">https://catalog.uaf.edu/bachelors/#bachelorofsciencetext</a> )		16
As part of the B.S. requirements, complete the following:		
MATH F252X	Calculus II	
PHYS F211X	General Physics I	
PHYS F212X	General Physics II	
<b>Energy Resource Engineering Program Requirements</b>		
Complete the following:		
CE F401	Arctic Engineering	3
ERE F101	Introduction to Energy Resource Engineering	3
ERE F301	Petroleum and Geothermal Reservoir Rock and Fluid Properties	3
ERE/EE F303	Electric Power Systems and Machines	4
ERE F407	Petroleum and Geothermal Production Engineering	3
ERE/EE F409	Renewable and Sustainable Energy Systems (Renewable and Sustainable Energy Systems)	3
ERE F426	Energy Drilling Engineering	3
ERE F444	Data Analysis and Modeling for Energy Engineers	3
ERE/ME F458	Energy and the Environment	3
ERE F469	Carbon Capture, Utilization and Sequestration	3
ERE F476	Petroleum and Geothermal Reservoir Engineering	3

ERE F486	Energy Resources Economics	3
ERE F490	Energy Resource Engineering Design I <sup>1</sup>	1
ERE F491	Energy Resource Engineering Design II <sup>1</sup>	3
ES F100X	Engineering Alaska - An Introduction to Engineering	3
ES F201	Computer Techniques	3
ES F208	Mechanics	4
ES F307	Elements of Electrical Engineering	3
ES F331	Mechanics of Materials	3
ES F341	Fluid Mechanics	4
ES F346	Introduction to Thermodynamics	3
MATH F253X	Calculus III	4
MATH F302	Differential Equations	3
MATH F426 or ES F301	Numerical Analysis Engineering Analysis	3
STAT F300	Statistics	3
One upper division technical elective as approved by advisor		3
<b>Fundamentals of Engineering (FE) Examination</b>		
Complete the Fundamentals of Engineering (FE) examination administered by the State of Alaska.		
<b>Total Credits</b>		<b>132</b>

<sup>1</sup> The baccalaureate capstone requirement is fulfilled by the successful completion of both ERE F490 and ERE F491.

## Learning Outcomes

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Learning Outcomes are measurable statements that describe knowledge or skills achieved by students upon completion of the program.

Students graduating from this program will be able to:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.
- An ability to understand Northern issues.