ENGINEERING MANAGEMENT

Department Website: Engineering Management (https://www.gonzaga.edu/school-of-engineering-applied-science/degrees-and-programs/engineering-management/)

The Engineering Management Program was developed to address a growing need for individuals that possess both engineering and management skills. Courses taken in the Engineering Management Program are intended to provide students with a broad understanding of the practice and concepts of engineering, and make them adaptive leaders who are ready to address challenges caused by rapid changes in technology. The program provides graduates an opportunity to select from a wide range of career paths.

The Engineering Management program attracts students whose talents and interests are not confined to a traditional engineering design and analysis position, as well as those drawn to the entrepreneurial aspects of engineering. The program is especially well suited to the typical engineering student attracted to Gonzaga University since it makes use of engineering and leadership skills they develop at GU, with their interest in helping others and making a valuable contribution to society. By combining a strong engineering background with a Minor in Business for Engineering Technologies from the School of Business Administration, students develop a skill#set that is sought after by employers.

Gonzaga's Engineering Management program provides students with a foundation in the critical skills required to be successful in their chosen career. The program contains a set of core engineering courses that provide a solid basis in engineering principles, augmented by relevant courses on the process of management as it applies to technically-based projects. Students also develop technical expertise by taking a set of SEAS Elective courses from the other School of Engineering and Applied Science disciplines - Civil, Computer, Electrical, and Mechanical Engineering, or Computer Science. The SEAS Electives draw from a wide selection of interests within engineering, allowing students to customize their degree as a multi-disciplinary collection across several disciplines or focused on an aspect within on discipline. The SEAS Electives must include at least three senior-level technical electives which are characterized as 4XX-level engineering courses or as 3XX- or 4XX level computer science courses. Engineering Management students must complete at least twenty-one credits of SEAS Electives courses. The Engineering Management program, in conjunction with its various constituencies, has clearly defined program objectives. These engineering program objectives are listed in the School of Engineering and Applied Science section of this catalog, and by the Gonzaga University Mission Statement that may be found at the beginning of the catalog.

The Bachelor of Science in Engineering Management degree program is accredited by the Engineering Accreditation Commission of ABET, www.abet.org (http://www.abet.org/), under the General Program Criteria and the Engineering Management and Similarly Named Engineering Programs Program Criteria.

Engineering Management (BS) Major Program Requirements

Contact Department Chair or your advisor for specific details.

Course	Title	Hours
First Year		
Fall		
CHEM 101	General Chemistry I	3
CHEM 101L	General Chemistry I Lab	1
DEPT 193		3
MATH 157	Calculus and Analytic Geometry I	4
COMM 100	Communication and Speech	3
PHIL 101	Reasoning	3
	Hours	**17**
Spring		
MATH 258	Calculus and Analytic Geometry II	4
PHYS 121	Physics I	4
PHYS 121L	Physics I Lab	1
PHIL 201	Philosophy of Human Nature	3
ENGL 101	Writing	3
RELI Core: Christianity and Catholic Religions		3
	Hours	**18**
Second Year		
Fall		
ECON 200	Economic Analysis (1st broadening course)	3
ENSC 205	Statics	3
PHYS 122	Physics II	4
PHYS 122L	Physics II Lab	1
MATH 259	Calculus and Analytic Geometry III	4
MENG 221	Materials Engineering	3
	Hours	**18**
Spring		
ENSC 301	Mechanics of Materials I	3
MATH 260	Ordinary Differential Equation	3
MATH 321	Statistics for Experimentalist	3
RELI Core: World/Comparative Religion		3
Ethics Core Requirement		3
	Hours	**15**
Third Year		
Fall		
SEAS Elective Course #1		3
Approved Computing Course		3
EENG 201	Circuit Analysis I	3
EENG 201L	Circuit Analysis I Lab	1
ENGM 310	Systems Engineering Management	3
ACCT 263	Accounting Analysis	3
	Hours	**16**
Spring		
SEAS Elective Course #2		3
SEAS Elective Course #3		3
ENSC 355	Thermal Science (odd years) (Business for Engineering Technologies Elective (even years))	3
BFIN 320	Principles of Finance	3
BUSN 283	Business Law	3
	Hours	**15**
Fourth Year		
Fall		
SEAS Elective Course #4		3
SEAS Elective Course #5		3
ENSC 491	Senior Design Project I	2
ENGM 405	Engineering Project Management	3
Core: History or Literature (2nd broadening course)		3
	Hours	**14**
Spring		
SEAS Elective Course #6		3
SEAS Elective Course #7		3

ENSC 492	Senior Design Project II	3
ENSC 400	Foundations of Engineering Exam [1]	0
ENSC 355	Thermal Science (odd years) (Business for Engineering Technologies Elective (even years)	3
DEPT 432	CIS:	3
	Hours	**15**
	Total Hours	**128**

[1] Students must show proof of having taken the examination in the State of Washington, as part of the requirements of this course.

SEAS Elective Courses

The SEAS Elective courses must include three upper division technical elective courses (typically 4XX-level engineering courses or 3XX- or 4XX-level computer science courses) which must comprise a minimum of nine credits. Some of the remaining SEAS Elective course credits may be needed to satisfy lower-level course prerequisites for the technical electives.

Required Minor for Business for Engineering Technologies

Code	Title	Hours
Required Courses		
ECON 200	Economic Analysis (Core Broadening Requirement)	3
ACCT 263	Accounting Analysis	3
BUSN 283	Business Law	3
MATH 321	Statistics for Experimentalist	3
BFIN 320	Principles of Finance	3
Electives		
Select two of the following:		6
ENGM 405	Engineering Project Management	
ECON 324	Economics of Environmental Protection	
MGMT 350	Principles of Management	
MKTG 310	Principles of Marketing	
OPER 340	Operations Management	
BENT 490	Creativity, Innovation, and Entrepreneurship	
Total Hours		**21**

Business for Engineering Technologies Minor

Required for Engineering Management Majors

Minor in Business for Engineering Technologies

Program Requirements

This minor is designed for engineering students (at present, students in the civil engineering and engineering management disciplines) at the undergraduate level. It recognizes the career skills employers are looking for in engineers pursuing engineering and construction management roles.

Code	Title	Hours
Required Courses		
ECON 200	Economic Analysis	3
MATH 321	Statistics for Experimentalist	3
ACCT 263	Accounting Analysis	3
BFIN 320	Principles of Finance	3
BUSN 283	Business Law	3
Electives		
Select two of the following:		6
MKTG 310	Principles of Marketing	
ECON 324	Economics of Environmental Protection	
OPER 340	Operations Management	
MGMT 350	Principles of Management	
ENSC 405	Engineering Project Management	
BENT 490	Creativity, Innovation, and Entrepreneurship	
Total Hours		**21**

Courses

ENGM 310. Systems Engineering Management. (3 Credits)
This course provides a broad overview of issues encountered in managing engineering activities: effective organization, leadership and control of technology; managing technology through product life cycles and application of lean principles; legal aspects of technology development and engineering professionalism. The course includes case studies and a team project.
Enrollment limited to students with a semester level of Fourth Year (96+ credits) or Third Year (60-95.99 credits).

Enrollment is limited to students with a program in Engineering Management.

ENGM 405. Engineering Project Management. (3 Credits)
Current tools used to manage engineering and technical projects. Topics covering both theory and practice: Definition of a project; Management and organization; Project planning, including chartering, project scope management, project time (schedule) management, project cost management, quality management, communications, project risk management, and procurement/contract management; Project control; and Project completion/termination.
Prerequisites: ENSC 300 with a minimum grade of D or BFIN 320 with a minimum grade of D

ENGM 460. Sustainable Product Development. (3 Credits)
This course focuses on the life cycles of products from needs analysis through conceptual design, production, and end-of-life. Life Cycle Analysis is applied to assess the sustainability of mock products. Classroom experiences are supplemented by insights from industries that are incorporating sustainable practices.
Students with a semester level of First Year (0-25.99 credits) or Second Year (26-59.99 credits) may **not** enroll.