REQUIREMENTS FOR THE BACHELOR OF SCIENCE IN CONSTRUCTION SCIENCE

COLLEGE OF ARCHITECTURE

THE UNIVERSITY OF OKLAHOMA

For Students Entering the Oklahoma State System for Higher Education **Summer 2010 through Spring 2011**

Credit Hours and Grade Average Requirements

Total Credit Hours	**129**
Minimum Upper-Division Hours Required	**48**
Minimum Retention/Graduation Grade Point Averages:	
Minimum OU Retention GPA	**2.50**
Minimum Combined Retention GPA	**2.50**
Minimum GPA on all Required Professional Courses	**2.50**

Construction Science

B250

Bachelor of Science in Construction Science

OU encourages students to complete at least 32-33 hours of applicable coursework each year to have the opportunity to graduate in four years.

Year	FIRST SEMESTER	Hours	SECOND SEMESTER	Hours
FRESHMAN	**CNS 1113**, Construction Industry	3	**ENGL 1213**, Principles of English Composition (Core I), **or**	3
	COMM 1113, Principles of Communication	3	**EXPO 1213**, Expository Writing (Core I)	
	ENGL 1113, Principles of English Composition (Core I)	3	**MATH 1823**, Calculus I (Core I)	3
	HIST 1483 or 1493, U.S. History (Core IV)	3	**P SC 1113**, American Federal Government (Core III)	3
	OPEN ELECTIVE	3	**GEOL 1114**, Physical Geology (Core II)	4
			***CNS 1212,** Computers in Construction	2
	TOTAL CREDIT HOURS	**15**	**TOTAL CREDIT HOURS**	**15**
SOPHOMORE	**ACCT 2113**, Fundamental Financial Accounting	3	**ACCT 2123**, Fundamental Managerial Accounting	3
	B C 2813, Business Communication	3	**ECON 1123**, Principles of Economics—Micro (Core III)	3
	ECON 1113, Principles of Economics—Macro (Core III)	3	**PHYS 1311**, General Physics Lab I (Core II)	1
	CNS 2713, Construction Materials & Methods	3	**PHYS 2414**, General Physics for Life Sciences Majors (Core II)	4
	CNS 2823, Construction Management Fundamentals	3	**CNS 2813**, Construction Documents & Quantity Surveying	3
	ARCH 2243 or 2343, History of the Built Environment I or II (Core IV)	3	**CNS 2812**, Construction Fundamentals Lab	2
	TOTAL CREDIT HOURS	**18**	**TOTAL CREDIT HOURS**	**16**

A minimum 2.50 OU and combined retention GPA is required for admission to Construction Science program. Admission is limited to the top 25 GPAs based on all courses listed above. All courses listed above must be completed before applying for admission to the junior year.

JUNIOR	**ARCH 3433**, Environmental Controls I	3	**ARCH 4833**, Environmental Controls II	3
	CNS 3103, Construction Surveying	3	**CNS 3223**, Structures I	3
	CNS 3123, Statics & Strengths of Materials	3	**CNS 3823**, Project Management & Controls	3
	CNS 3512, Construction Cost Estimating	2	**CNS 3821**, Project Controls Lab	1
	CNS 3612, Project Controls Lab I	2	**CNS 3943**, Field Work	3
	CNS 3812, Project Planning & Scheduling	2	**ECON 2843**, Elements of Statistics (Core I)	3
	MGT 3013, Principles of Organization & Management	3	**L S 3323**, Legal Environment of Business	3
	TOTAL CREDIT HOURS	**18**	**TOTAL CREDIT HOURS**	**19**
SENIOR	**CNS 4112**, Understanding Design Services	2	**CNS 4153**, Legal Issues in Construction	3
	CNS 4113, Structures II	3	**CNS 4881**, Construction Safety Management	1
	CNS 4122, Building Information Modeling for Construction	2	**CNS 4993**, Construction Science Capstone (Capstone)	3
	CNS 4523, Pre-Construction Services	3		
	CNS 4613, Soils and Foundations	3	Construction Science Elective (upper-division)	2
	UNDERSTANDING ARTISTIC FORMS ELECTIVE (Core IV)	3	NON-WESTERN CULTURE ELECTIVE (Core IV)—UPPER-DIVISION	3
	TOTAL CREDIT HOURS	**16**	**TOTAL CREDIT HOURS**	**12**

*This course fulfills the Computer Literacy Requirement for graduation as required by the Oklahoma State Regents for Higher Education.

A minimum grade of C is required in all CNS courses.

CNS students are strongly encouraged to obtain a minor in Architecture, Business, or Communication.

University-Wide General Education Requirements (minimum 40 hours)

Courses designated as Core I, II, III, IV, or Capstone are part of the General Education curriculum. Students must complete a minimum of 40 hours of General Education courses, chosen from the approved list, including at least one upper-division Gen. Ed. course outside of the student's major. Courses graded S/U or P/NP will not apply.

Core I	**Symbolic and Oral Communication (9–19 hours, 3–5 courses)** •English Composition–6 hours, 2 courses •Mathematics–3 hours, 1 course •Foreign Language–0–10 hours, 2 courses in the same language, (which can be met by successfully completing two years of the same foreign language in high school) •Other (courses such as communication, logic or public speaking)
Core II	**Natural Science (7 hours, 2 courses)** •Courses must be taken from different disciplines in the biological and/or physical sciences; one of which must include a laboratory.
Core III	**Social Science (6 hours, 2 courses)** •One course must be P SC 1113, "American Federal Government"
Core IV	**Humanities (12 hours, 4 courses)** •Understanding Artistic Forms–3 hours, 1 course •Western Civilization and Culture–6 hours, 2 courses, including HIST 1483 or HIST 1493 •Non-Western Cultures–3 hours, 1 course
Senior Capstone Experience (3 hours, 1 course)	

COURSES IN ACCOUNTING (ACCT)

2113 Fundamental Financial Accounting. Prerequisite: Business Administration 1001 or concurrent enrollment. Basic principles of financial accounting. Emphasis on the preparation and use of the income statement, balance sheet and statement of funds flow for corpora-tions. Coverage includes the analysis and recording of transactions involving cash, inventories, fixed assets, bonds and capital stock as well as closing, adjusting and reversing entries for revenue and expense items. (F, Sp, Su)

2123 Fundamental Managerial Accounting. Prerequisite: 2113. Introduction to managerial accounting. Analysis of cost behavior and the use of this knowledge for both short- and long-term decision. An introduction to budgeting and the accumulation of product costs for planning and performance evaluation. Specific coverage includes cost-volume-profit analysis, capital budgeting, allocations, variances from standard costs and the measurement of divisional performance. (F, Sp, Su)

COURSES IN ARCHITECTURE (ARCH)

2243 History of the Built Environment I. Prerequisite: majors only or permission of instructor. A theological investigation of the cultural, historical, political and aesthetic values of diverse Western and non-western cultures that result in significant built environments through the 16th century. Buildings, urbanism, theories, and cultural context will be emphasized. (F) [IV-WC]

2343 History of the Built Environment II. Prerequisite: majors only or permission of instructor. Overview of built artifacts in Europe and the Americas since 1750. Emphasis on the formal, philosophical, social, technical and economic context of the projects discussed, as well as their later reinterpretations. (Sp) [IV-WC]

3433 Environmental Controls I. Prerequisite: Architecture major and completion of 2233, 2243, 2333, 2343, 2354, 2454; or Construction Science major. Introduction to psychrometrics, heat transmission in buildings, heating, air conditioning and ventilation, solar heat gain, passive solar conditioning, plumbing and fire protection. (F)

4833 Environmental Controls II. Prerequisite: Architecture major and completion of 3433, 3443, 3533, 3554, 3633; or Construction Science major. Introduction to acoustics, electrical design, lighting design, alarm and life safety systems. (Sp)

COURSES IN BUSINESS COMMUNICATION (B C)

2813 Business Communication. Prerequisite: English 1113 and 1213 or equivalent, Communication 1113 or 2613 and Business Administration 1001 or concurrent enrollment. This course is writing intensive. Focuses on oral and written communication as well as critical thinking. Also covers persuasive strategies and moves sequentially from analytical skills to composition strategies to written and oral reports. (F, Sp, Su)

COURSES IN CONSTRUCTION SCIENCE (CNS)

1113 Construction Industry: Impact on Society. Overview of the construction industry including the major participants, the job opportunities, the various delivery methods, and the construction process. (F)

1212 Computers in Construction. Introductory course providing students with basic computer application knowledge. Familiarizes students with current applications of spreadsheet, 2D and 3D CAD software for use in the construction industry. (Sp)

2713 Construction Materials and Methods. Prerequisite: 1212. Survey of materials, methods, and procedures used in a variety of building types. Students gain an understanding of the basis for choosing different materials and methods, how different building systems are installed, work sequencing, quality control and equipment selection in the building process. Sustainable high performance systems and products are explored. (F)

2812 Construction Fundamentals Lab. Prerequisite: 2713; corequisite: 2813. Practical exercises reinforce concepts discussed in CNS 2713 and 2813 to improve students' understanding and ability to interpret construction drawings and specifications, use drawing and modeling techniques and understand actual installation of common materials and systems used in buildings. (Sp)

2813 Construction Documents and Quatity Surveying. Prerequisite: 2713. Develops students' ability to understand and interpret the construction drawings and specifications commonly encountered in building construction. Reinforces visual communication skills through sketching and computer graphics to develop the ability to visualize a set of 2D drawings as a 3D building. Drawings, specifications, and sketching are used to learn basic material takeoff processes. (Sp)

2823 Construction Management Fundamentals. The exploration of construction equipment, construction accounting, and ethics in the management of the day to day operations of a construction project as they relate to the manager's decision making process. (F)

3103 Construction Surveying. Prerequisite: Construction Science major or special permission. The practical application of taping, differential, profile, trigonometric leveling, angle measurement, traversing, and other instrument layout techniques for vertical and horizontal construction project control and layout. (F)

3123 Statics and Strengths of Materials. Prerequisite: Math 1823, Physics 2414, and Physics 1311. Provide an understanding of concepts, knowledge and methods of statics and strengths of materials for constructors and architects. (F)

3223 Structures I. Prerequisite: 3123 or special permission. The study of structural design including simple building frames, simple structural systems for gravity, lateral and seismic loads in steel, wood and masonry; basic structural detailing. (Sp)

3512 Cost Estimating. Prerequisite: 2813. Content is designed to familiarize students with the estimating process, including coordinating the quantity survey with the estimate, quantitative elements of both direct and indirect cost, price loading, bid preparaton, and the ability to visualize the project. Students will perform cost estimates with estimating software. (F)

3612 Project Controls Lab I. Prerequisite: 2713 and 2813. Applies the concepts in cost estimating and project planning and scheduling to a construction project. (F)

3812 Project Planning and Scheduling. Prerequisite: 2813. Corequisite: 3512 and 3612. Application of scheduling techniques in an integrated construction planning, scheduling and control system. Students will gain knowledge of scheduling theory scheduling options, legal implications and practical applications of scheduling software. Students will schedule a building project using computer software. (F)

3821 Project Controls Lab. Prerequisite: 3512, 3612 and 3812; corequisite: 3823. Lab applies the concepts learned in project management and controls to a construction project. (Sp)

3823 Project Management and Controls. Prerequisite: 3512, 3612 and 3812. Focuses on the management of a commercial building project after the contract is awarded. Content includes required project communication and documentation and setup and use of a cost accounting system to track and manage the project – including field productivity, work sequence, cost and profitability, construction finance, payment and cash flow, schedule compression and updating change process and closeout. (Sp)

3943 Field Work. Prerequisite: junior standing and permission. Utilize a construction work experience to prepare for construction management functions. Student is responsible for finding the construction-related activity and proposing a work-related project. Written and oral presentation is required. (F, Sp, Su)

4112 Understanding Design Services. Prerequisite: 3823. Course explores the roles and responsibilities of the owner, architect/engineer, design consultants and their interface with the constructor from project conception to completion. (F)

4113 Structures II. Prerequisite: 3223. Extension of the study of building structures through structural design of continuous building frameworks; loads, concrete structural systems, foundations, connections, and structural detailing. (F)

4122 Building Information Modeling for Construction. Prerequisite: 3823. Emphasizes the skills and knowledge required by the constructor to participate in the creation, projection, and execution of a project using BIM. Students combine knowledge of materials, methods, drafting, estimating and scheduling with BIM computer applications. (F)

4153 Legal Issues in Construction. Prerequisite: 4523 and Legal Studies 3323. An examination of current construction law as it pertains to the day-to-day management of the construction contract. Includes legal ramifications of construction bidding, contracts, changes, delays and dispute resolution. Emphasis is on the reduction of dispute through knowledge. (Sp)

4523 Pre-Construction Services. Prerequisite: 3823. Explores the role of the constructor, the services they offer during the design process, and their collaboration with design professionals and owners during the pre-contruction phase of a project. (F)

4613 Soils and Foundations. Prerequisite: 3223. Content includes identification and classification of soil properties as they pertain to a construction project, the role of the geotechnical engineer, soils reports, soil preparation, foundation design, soil testing, and the causes of building settlement. Practical exercises are emphasized. (F)

4881 Construction Safety Management. Prerequisite: 4523. Emphasizes the importance of safety in the construction industry through guest speakers, readings and other safety materials. Emphasis will be placed on safety as it relates to entry-level management positions and the professional's responsibility in creating a safe jobsite. (F)

4993 Construction Science Capstone. Prerequisite: 4523. The capstone course is the culmination of the construction science undergraduate experience. Students apply all aspects of the construction project management process in an integrated manner to a single construction project. Class interaction requires participants to utilize and extend knowledge of all areas of expertise used by construction managers. Teamwork, interdisciplinary collaboration and cooperation is emphasized. (Sp) [V]

COURSES IN ECONOMICS (ECON)

1113 Principles of Economics—Macro. The functioning and current problems of the aggregate economy: determination and analysis of national income, employment, inflation and stabilization; money and banking, monetary and fiscal policy; and aspects of international interdependence. **Laboratory** (F, Sp, Su) [III-SS]

1123 Principles of Economics—Micro. Goals, incentives and allocation of resources resulting from economic behavior with applications and illustrations from current issues: operation of markets for goods, services and factors of production; the behavior of firms and industries in different types of competition and income distribution. **Laboratory** (F, Sp, Su) [III-SS]

2843 Elements of Statistics. Prerequisite: Mathematics 1443 or equivalent. Basic statistical techniques emphasizing business and economic applications. Topics covered include data summary techniques, elementary probability theory, estimation, hypothesis testing, simple regression, time-series and index numbers. **Laboratory** (F, Sp, Su) [I-M]

COURSES IN GEOLOGY (GEOL)

1114 Physical Geology for Science and Engineering Majors. Prerequisite: equivalent knowledge of high school chemistry, algebra and trigonometry. Laboratory included. Plate tectonics, the makeup of continents and mountain building. Heat flow, magnetism, gravity, rock deformation, earthquakes and the earth's interior. Surface processes including weathering, erosion, transport and deposition. Landforms, rivers, groundwater, glaciers, ocean processes, and volcanoes. Minerals and rocks. Application of geology to land-use, groundwater, mineral and fossil fuel exploration. **Laboratory** (F, Sp) [II-LAB]

COURSES IN LEGAL STUDIES (L S)

3323 Legal Environment of Business. Prerequisite: junior standing. The legal environment of business organizations with ethical considerations and the social and political influences affecting such environments. (F, Sp, Su)

COURSES IN MANAGEMENT (MGT)

3013 Principles of Organization and Management. Prerequisite: junior standing. An introductory course presenting the basic concepts and practices of management, both private and public. Historical development of management; basic definitions and philosophy; fundamental managerial functions, including planning, organizing, staffing, directing, and controlling; a survey approach to quantification in organizational life; current trends in management; possible future developments in organization and administration. (F, Sp, Su)

COURSES IN PHYSICS (PHYS)

1311 General Physics Lab I. Corequisite: 2414 or 2514. Experiments in basic law of mechanics and thermodynamics. (F, Sp, Su) [II-LAB]

2414 General Physics for Life Science Oriented Majors. Prerequisite: Mathematics 1523 or 1743. Not open to students with credit in 1205 or 2514. Kinematics and dynamics of particles and rigid bodies, gravitation, equilibrium, momentum, energy, static and flowing fluids, kinetic theory, heat and thermodynamics, vibrations, waves and sound. (F, Sp, Su) [II-NL]