



American Society of
Landscape Architects

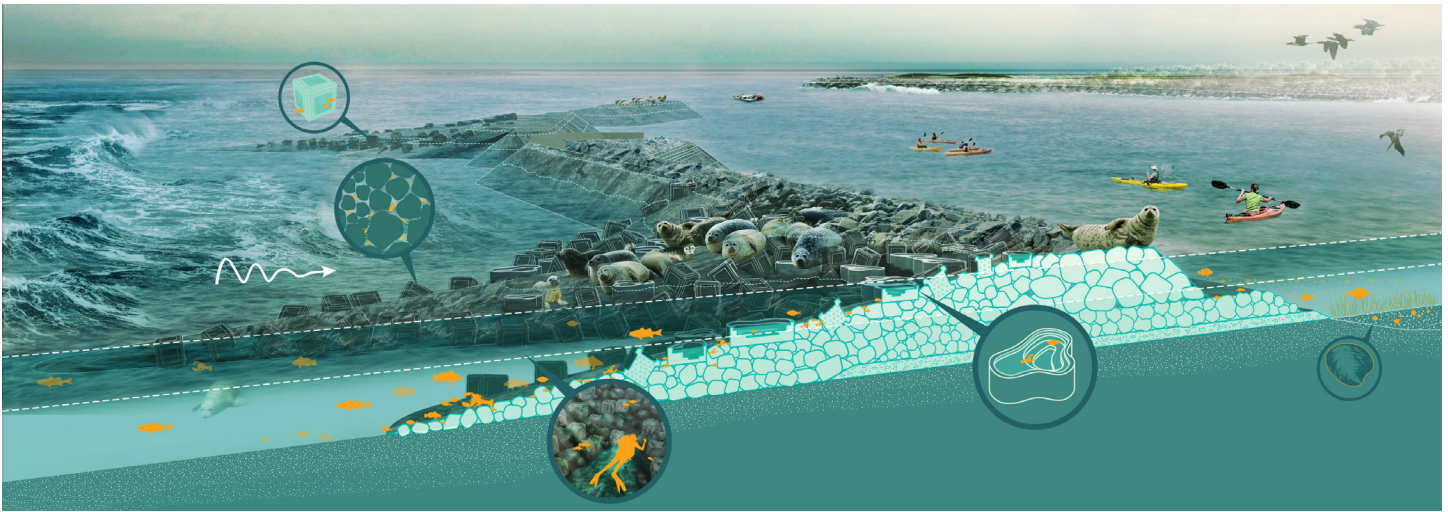


Landscape Architecture Is a STEM Discipline

2018 ASLA Professional General Design Honor Award.
Chicago Riverwalk | State Street to Franklin Street.
Sasaki and Ross Barney Architects.
(Image credit: Kate Joyce; overlay courtesy of Sasaki)

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Executive Summary

Landscape architecture is inherently a science, technology, engineering, and mathematics (STEM) discipline. As stewards of the natural and built environment, landscape architects are educated in and routinely apply the physical and natural sciences, technology, engineering, and mathematics in the planning and design of sites where millions of people live, work, and play.

Increased emphasis in recent years on the impacts of natural and built landscapes on the planet's climate and human health and well-being has underscored the need for landscape architecture professionals to be educated and trained in the natural, physical, and human sciences. The landscape architecture profession has responded to this need by intensifying efforts to center landscape architecture education and licensure around STEM disciplines, from hydrology and botany to engineering and sustainability studies. In addition, the increasing number of federal and state government bodies defining landscape architecture as a STEM profession demonstrates the growing awareness that the sciences play a primary role in preparing landscape architects to address some of the planet's most challenging problems.

While the evidence is clear that landscape architecture is undoubtedly a STEM discipline and profession, there are some organizations and government entities that still do not officially recognize this, including the Department of Homeland Security's Student Exchange Visitor Program. The American Society of Landscape Architects (ASLA) and its 15,000 members are working to ensure that landscape architecture is rightfully recognized and designated as a STEM discipline and profession by a myriad of governmental bodies and STEM-focused organizations.

This white paper reviews the evidence that demonstrates that landscape architecture sits firmly within the category of STEM disciplines. It reviews the current state of landscape architecture education and licensure with respect

Landscape architects apply their in depth knowledge of natural sciences, hydrodynamic modeling, and coastal systems engineering to plan and design reef barriers that protect against wave damage and erosion and create new wildlife habitat.

Image credit: Living Breakwater, Staten Island, NY.
SCAPE Landscape Architecture

to STEM disciplines and compares landscape architecture education to the educational content of other fields that are widely considered to be STEM disciplines. In addition, this paper reviews the numerous governmental agencies at the federal and state level that already define landscape architecture as a STEM discipline.

As a field rooted in the natural, physical, and human sciences, landscape architecture education prepares future practitioners to use science, technology, engineering, and mathematics to develop innovative planning and design solutions to challenges in the built and natural environments.

Although there currently is no single, uniform definition on what constitutes a “STEM discipline,” the interagency Standard Occupational Classification (SOC) Policy Committee recommended in 2012 that landscape architecture be included in the scope of STEM occupations under an Architecture Occupations subgroup. The Office of Management and Budget approved the Policy Committee’s recommendations in 2017. Further, several states formally define landscape architecture as a STEM discipline.

In addition, landscape architecture is defined by a number of federal programs and agencies in ways that highlight the connections between the discipline to the sciences, including the widely used Classification of Instructional Programs (CIP), which defines landscape architecture (CIP code 04.0601) as a program that “[i]ncludes instruction in geology and hydrology; soils, groundcovers, and horticultural elements. . . .”

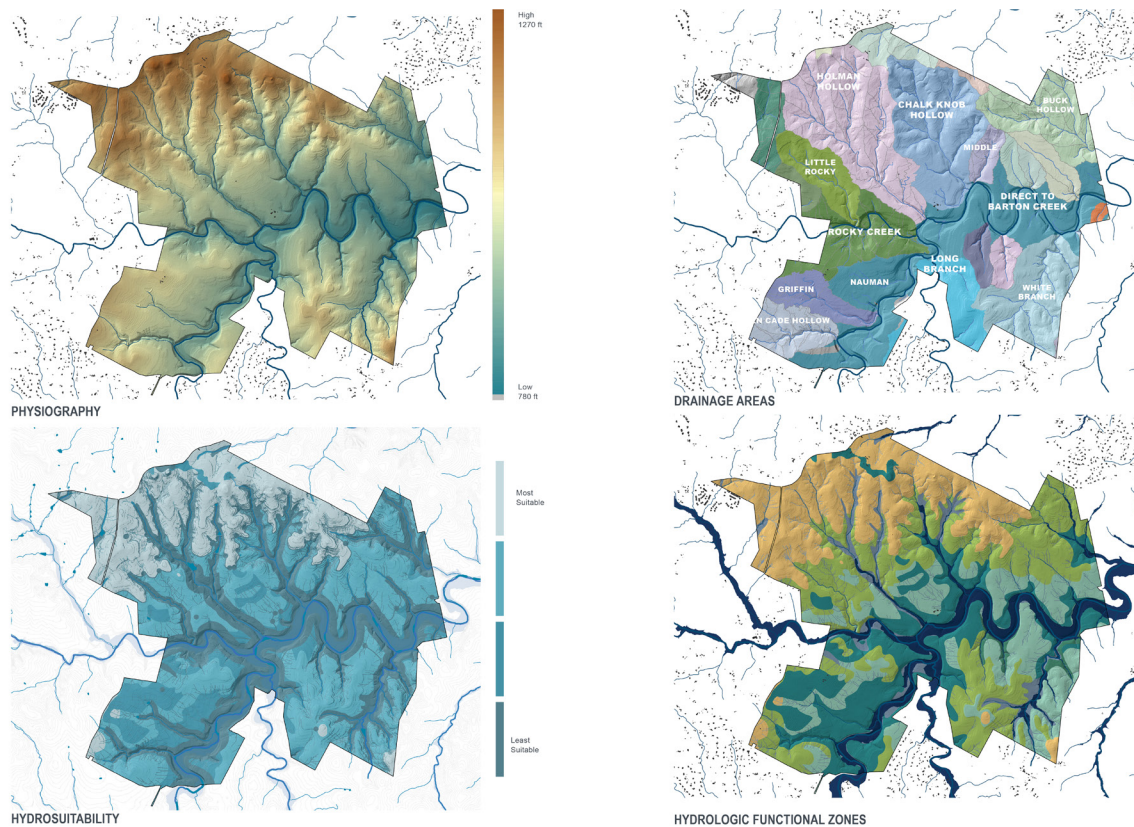
Landscape architects are educated, trained, and tested on a set of knowledge, skills, and abilities that are undoubtedly within STEM disciplines. The Landscape Architectural Accreditation Board (LAAB) specifies standards for accreditation for programs offering professional degrees in landscape architecture, including bachelor or master of landscape architecture (BLA or MLA). LAAB requires academic programs in landscape architecture to provide curricular content in nine professional areas, many of which are in disciplines broadly recognized as STEM.

The technical complexity of landscape architecture and its impact on public health, safety, and welfare have led all 50 states and the District of Columbia to require practitioners to be licensed. Landscape architects must pass a national registration exam, the Landscape Architecture Registration Exam (LARE), before they can be licensed by the state boards of registration.

The LARE is a four-part, fully computerized examination designed to determine whether applicants for landscape architectural licensure possess sufficient knowledge, skills, and abilities to provide landscape architectural services without endangering the health, safety, and welfare of the public. Two of the four

sections of the LARE—1) Inventory and Analysis, and 2) Grading and Drainage, and Construction Documentation—focus almost exclusively on scientific, engineering, technological, and mathematical knowledge.

Landscape architecture degree programs across the country include as much or more STEM content as degree programs for a number of related disciplines commonly considered to be STEM. A 2019 analysis of two such programs—environmental studies (CIP code 3.0103) and sustainability studies (CIP code 30.3301)—in comparison with a landscape architecture program reveals that the landscape architecture program has higher overall STEM content than those on the Department of Homeland Security (DHS)-approved list.



Introduction: Landscape Architecture and STEM

Landscape architecture is a discipline that requires education in and the application of science, technology, engineering, and mathematics (STEM) as part of its academic foundation and its professional practice.

As a field rooted in the natural, physical, and human sciences, landscape architecture education prepares future practitioners to use science, technology, engineering, and mathematics to develop innovative solutions to design challenges in the built and natural environments. Because each landscape architecture project is unique, developing site-specific solutions that rely on the natural, physical, and human sciences is fundamental to the education, training, and practice of landscape architecture.

Landscape architects map hydro-geomorphologically-sensitive landscape factors in GIS, including floodplains, slopes, risers, geological formation boundaries, and soils, in order to create sustainable water management zones as part of a new masterplan.

Image credit: 2018 ASLA Professional Analysis and Planning Honor Award. From Pixels to Stewardship: Advancing Conservation Through Digital Innovation. Andropogon Associates.

Landscape architects continue to spearhead the innovative application of the physical and human sciences toward solving problems of nature-human interactions. The profession applies technology in cutting-edge materials and processes to improve the efficiency, functionality, and health of our natural and built environments. Landscape architects engage in engineering-based design processes to protect the health, safety, and welfare of the public, and to create lasting value in the built environment. Finally, landscape architecture's practical application of mathematics is inherent in the day-to-day practice of the profession, occurring as part of the calculations in everything from construction cost estimates to the complex biochemical reactions of pollutant removal.

In addition to leading planning and design projects, landscape architects are also critical members of interdisciplinary teams that have been assembled to address specific design or research challenges. This is due to landscape architects' grasp of the scientific implications of the function and value of natural systems, along with their ability—honed through education and training—to create innovative design solutions.

1. Definitions of STEM

1. [Science, Technology, Engineering, and Mathematics \(STEM\) Education: An Overview](#)

1.1 Lack of a Uniform STEM Definition

There currently does not exist a single, uniform definition on what constitutes a “STEM discipline.” As the Congressional Research Service (CRS) notes:

Whether it is visas for foreign workers, scholarships for STEM majors, or funding for scientific research, the question of what is meant by the term STEM is central to the federal policy conversation. Some federal agencies, such as the National Science Foundation (NSF), generally use a broader definition of STEM that includes psychology and the social sciences (e.g., political science, economics) as well as the physical and life sciences and engineering (e.g., physics, chemistry, biology, mathematics). Others, including the Department of Homeland Security (DHS) and the U.S. Immigration and Customs Enforcement (ICE), use a narrower definition that generally excludes most (but not all) social sciences and focuses on mathematics, chemistry, physics, computer and information sciences, and engineering. . . . However, some analysts argue that field-specific definitions are too static and that definitions of STEM should focus on “an assemblage of practices and processes that transcend disciplinary lines and from which knowledge and learning of a particular kind emerges.” The lack of a common definition for STEM has contributed to confusion, and even contradictory findings, in federal agency, academic, and nonprofit research on the condition of the U.S. STEM workforce and labor supply.¹

1.2 Standard Occupational Classification

Managed by the Bureau of Labor Statistics (BLS), the Standard Occupational Classification (SOC) system is a federal statistical standard used by a number of federal agencies² to classify workers into occupational categories “for the purpose of collecting, calculating, or disseminating data.”³

The interagency SOC Policy Committee addressed the lack of clarity around a definition of STEM in 2012, noting that “[t]he acronym ‘STEM’ is widely used in discussions across government, academia, and business, given increased emphasis on innovation and its implications for the economy and labor market. The discussion and analyses quickly get confounded since there is no commonly agreed upon definition of STEM.”⁴

As a result of the confusion, the U.S. Office of Management and Budget (OMB) asked the SOC Policy Committee (SOCPC) in 2011 to make recommendations for defining STEM occupations “in order to enhance comparability of data across statistical agencies and organizations studying the STEM workforce for policymaking purposes, including educational and workforce planners.”⁵

In 2012, SOCPC disseminated recommendations for defining STEM occupations. According to CRS, “The SOC Policy Committee recommended that STEM occupations fall into two domains: (1) Science, Engineering, Mathematics, and Information Technology, and (2) Science- and Engineering-Related.”⁶

In addition, within the domains the Committee identified five types of STEM occupations:

- A. Research, Development, Design, or Practitioner Occupations
- B. Technologist and Technician Occupations
- C. Postsecondary Teaching Occupations
- D. Managerial Occupations
- E. Sales Occupations

Within the Science and Engineering-Related Domain, the Committee recommended two subgroups, Architecture Occupations and Health Occupations. Under Architecture Occupations, the Committee identified landscape architecture (SOC 17-1012) as a STEM occupation as a “Research, Development, Design, or Practitioner Occupation.”⁷

The 2012 recommendations were included in the 2018 SOC update, published by the Office of Management and Budget (OMB) on November 28, 2017.⁸ (See Appendix A)

2. Other federal agencies and programs that use the SOC include the Department of Commerce (Census Bureau), Department of Defense, Department of Education, Department of Labor (Employment and Training Administration (ETA)), Equal Employment Opportunity Commission, and the National Science Foundation. (<https://www.bls.gov/soc/socimp.htm>).

3. <https://www.bls.gov/soc/home.htm>

4. [Microsoft Word - Attachment A STEM.docx \(bls.gov\)](#)

5. Ibid.

6. [Science, Technology, Engineering, and Mathematics \(STEM\) Education: An Overview](#)

7. [Attachment C STEM.xls \(bls.gov\)](#)

8. [Attachment C 2018 \(bls.gov\)](#)



2. Landscape Architecture Definitions and Scope

Landscape architecture encompasses the analysis, planning, design, management, and stewardship of the natural and built environment.

2.1 American Society of Landscape Architects Definition of Landscape Architecture

Landscape architects plan and design the spaces outside buildings and structures, as well as spaces on rooftops and over structures, including community master plans, multimodal transportation networks, transit-oriented development, park and outdoor recreation spaces, water and stormwater management infrastructure, streetscapes, and more. Furthermore, as the impacts of climate change intensify, landscape architects are leading efforts to conserve water, protect food sources, prevent surface water and groundwater pollution, mitigate storm surge flooding and sea-level rise, protect against and manage wildfires, and more.

The American Society of Landscape Architects (ASLA) defines landscape architecture as “any service where landscape architectural education, training, experience, and the application of mathematical, physical, social, and natural science principles are applied.”⁹

Landscape architects use their knowledge of natural and material sciences to design innovative environmental solutions, such as structured floating wetlands that clean water and restore wildlife habitat.

Image credit: 2018 ASLA Professional Research Honor Award.
Urban Aquatic Health: Integrating New Technologies and Resiliency into Floating Wetlands. Ayers Saint Gross.

9. https://www.asla.org/uploaded-Files/CMS/Advocate/Public_Policies/Public/Licensure_Definition_of_Practice.pdf

2.2 Federal Government Definitions of Landscape Architecture:

Several federal agencies and programs define landscape architecture in ways that highlight the connections of the discipline to the sciences.

2.2.a Classification of Instructional Programs (CIP)

The Classification of Instructional Programs (CIP) “provides a taxonomic scheme that supports the accurate tracking and reporting of fields of study and program completions activity. CIP was originally developed by the U.S. Department of Education’s National Center for Education Statistics (NCES) in 1980, with revisions occurring in 1985, 1990, 2000, 2010 and 2020.”¹⁰

The 2020 update of the CIP defines landscape architecture (CIP code 04.0601) as:

“A program that prepares individuals for the independent professional practice of landscape architecture and research in various aspects of the field. Includes instruction in geology and hydrology; soils, groundcovers, and horticultural elements; project and site planning; landscape design, history, and theory; environmental design; applicable law and regulations; and professional responsibilities and standards.”¹¹

2.2.b Department of Defense

The U.S. Department of Defense’s (DoD) Unified Facilities Criteria (UFC) provides planning, design, construction, sustainment, restoration, and modernization criteria for military departments, defense agencies, and for DoD Field Activities. UFC are used on all DoD projects and work for other customers where appropriate.¹²

The UFC defines landscape architecture as a field that:

“combines ecology, hydrology, engineering, planning, and functional design to create successful DoD facilities that achieve the following goals:

- Protect the health, safety, and welfare of all users.
- Elevate Installation functionality and appearance to enhance the quality of life.
- Establish a sense of place and unique identity.
- Preserve cultural and historic landscapes.
- Provide spaces considering ‘human factors.’
- Achieve environmentally sustainable development and operations.
- Protect natural communities of plants and wildlife.
- Meet DoD requirements for outdoor water use and management.
- Utilize operation and maintenance plans to ensure successful long-term viability of landscapes.”¹³

10. [CIP user site \(ed.gov\)](#)

11. [CIP user site \(ed.gov\)](#)

12. [UNIFIED FACILITIES CRITERIA \(UFC\) DoD MINIMUM ANTITERRORISM STANDARDS FOR BUILDINGS - UNT Digital Library](#)

13. [UFC 3-201-02 Landscape Architecture, with Change 1 \(wbdg.org\)](#)

2.3 State Government Definitions of Landscape Architecture

14. § 54.1-400. Definitions (virginia.gov)

While each state has its own definition of landscape architecture, most are similar in nature to that of the Commonwealth of Virginia:

“Landscape architect” means a person who, by reason of his special knowledge of natural, physical, and mathematical sciences, and the principles and methodology of landscape architecture and landscape architectural design acquired by professional education, practical experience, or both, is qualified to engage in the practice of landscape architecture and whose competence has been attested by the Board through licensure as a landscape architect.”¹⁴

As noted above, landscape architecture is defined in federal guidelines and state licensure legislation as a profession whose practitioners require extensive education in—and routinely practice—the physical and natural sciences in the pursuit of innovative design solutions to shape the natural and built environments.



3. Landscape Architecture Education and Licensure

In order to practice the profession, landscape architects are educated, trained, and tested on a set of knowledge, skills, and abilities that sit firmly within STEM disciplines, including:

- site design
- land planning
- grading
- drainage
- stormwater management
- horticulture

Landscape architects are also educators who teach undergraduate and graduate students with the latest technologies, such as this dynamic modeling and geo-morphological table that helps students understand how vegetation and creek structures affect flood control.

Image credit: 2019 ASLA Professional Analysis and Planning Honor Award. Public Sediment for Alameda. SCAPE Landscape Architecture.

- environmental sciences
- site suitability
- erosion control
- hydrology
- irrigation
- vehicular and pedestrian circulation
- roadway alignment design
- manipulation of contours and spot elevations
- calculations of slopes, grades, and volumes of material
- design of surface and subsurface storm drainage, including hydraulic characteristics and storm drain connections
- site planning for buildings and other structures; and
- the research of innovative design solutions.

3.1 Landscape Architecture Education Requirements and STEM

Landscape architects are educated, trained, and tested on numerous STEM disciplines that comprise the core of the landscape architecture education.

In the United States, the Landscape Architectural Accreditation Board (LAAB) specifies standards for the accreditation for programs offering professional degrees in landscape architecture, including bachelor or master of landscape architecture (BLA or MLA).

The Landscape Architectural Accreditation Board (LAAB) is recognized by the Council for Higher Education Accreditation as the accrediting agency for first-professional baccalaureate and master's degree programs in landscape architecture in the United States. Currently, LAAB accredits at least one program at 73 institutions in the United States. There are 53 accredited MLA programs and 47 accredited undergraduate programs. In addition to the accredited programs, one MLA program has achieved candidacy status. A program that has candidacy status has made a commitment to apply for initial accreditation within twelve months of its first graduating class.

LAAB requires academic programs in landscape architecture to provide curricular content in nine professional areas, many of which are in disciplines broadly recognized as STEM. These include:

1. Systems and processes—natural and cultural (related to design, planning, and management)
 - plants and ecosystems sciences
 - built environment and infrastructure
 - human factors and social and community systems
 - human health and well-being

2. Assessment and evaluation

- site assessment
- pre-design analysis
- landscape performance
- post-occupancy evaluation
- visual and scenic assessment

3. History, theory, philosophy, principles, and values

- sustainability, resiliency, stewardship
- health, safety, welfare
- numeracy, quantitative problem-solving, and communication
- site materials
- use and management of plants and vegetation

4. Computer applications and advanced technologies

- visualization and modeling
- communication (conceptual and construction drawings)
- geospatial analysis

5. Research and scholarly methods (for master's-level degree programs)

- quantitative and qualitative methods
- establishing a research hypothesis
- framing research questions
- literature/case study review/precedent review
- research integrity and protection of human subjects
- communication of research

3.1.a Typical Landscape Architecture Curricula

Although each landscape architecture program is somewhat different, every LAAB-accredited program must meet the requirements above.

As such, landscape architecture students are required to take courses in numerous STEM disciplines. A 2021 survey of U.S. landscape architecture schools conducted by ASLA found that bachelor's and master's degree programs in landscape architecture contain numerous courses with significant STEM content:

Average Number of Required Courses with STEM Content in U.S. Landscape Architecture BLA/MLA Programs¹⁵

	BLA	MLA
Botany/Horticulture	4.2	2.6
Construction Materials/Methods	4.2	2.8
Ecology	4.7	3.8

	BLA	MLA
Engineering	2.8	2.5
Geology	2.7	0.8
Hydrology	3.0	1.6
Mathematics	2.3	1.1
Stormwater Management/Drainage	3.3	1.9
Sustainability Studies	5.7	4.4
Vehicular/Pedestrian Circulation/Roadway Alignment/Design	3.3	2.1

(See Appendix C for detailed information from schools that responded to the ASLA survey.)

3.2 Landscape Architects’ Professional Licensure Requirements and STEM

Landscape architects are charged to ensure the health, safety, and welfare of the users of all their works. The technical complexity of landscape architecture and its impact on public health, safety, and welfare have led all 50 states and the District of Columbia to require practitioners to be licensed. In addition to meeting education and experience requirements, candidates for landscape architecture licensure must pass a national registration exam—the Landscape Architecture Registration Exam (LARE)—before they can be licensed by the state boards of registration.

The Landscape Architect Registration Examination (LARE) is a four-part, fully computerized examination designed to determine whether applicants for landscape architectural licensure possess sufficient knowledge, skills, and abilities to provide landscape architectural services without endangering the health, safety, and welfare of the public. The LARE is prepared and scored by the Council of Landscape Architecture Registration Boards (CLARB) in accordance with all current standards for fairness and quality of licensure exams. All sections of the LARE are administered by CLARB, and all candidates register for the exam on the CLARB website. While the requirements to sit for the exam vary by jurisdiction, the exam, its administration dates and procedures, and its standards for passing the exam are the same in every jurisdiction.

The content of the LARE is based on the results of a scientific “job analysis” survey conducted every five to seven years. The most recent survey was administered in early 2016 and included the participation of more than 5548 practicing landscape architects from the United States and Canada. The survey results were analyzed by a group of subject matter experts, comprised of licensed landscape architects from diverse areas of practice and locations across the continent. Survey respondents were asked to rate all job tasks on three separate scales: how frequently the tasks were performed, how important the tasks were to successful

performance of the job, and whether successful performance of each task was required at initial licensure.¹⁶

Section 1 — Project and Construction Management

Section 2 — Inventory and Analysis

Section 3 — Design

Section 4 — Grading, Drainage, and Construction Documentation¹⁷

In particular, Sections 2 and 4 of the LARE focus on scientific, engineering, technological, and mathematical knowledge.¹⁸

Section 2: Inventory and Analysis

Tests a candidate's knowledge of inventory, data gathering and analysis techniques, and the conceptual decision-making process that occurs before site planning. Topics include site suitability, functional relationships, land use planning, principles of design, and stormwater management. An analysis of existing conditions may include site use, circulation, utility, microclimate, floodplain conditions, soil, slope, solar, surface hydrology, and other factors.

Knowledge, Skills and Abilities (KSA) tested in Section 2 include:

- Perform Circulation Analysis
- Interpret Utility Analysis
- Perform Micro and Macro Climate Analysis
- Perform Hydrological Analysis
- Perform Vegetation Analysis
- Interpret Ecological Analysis
- Perform Topographical Analysis
- Interpret Soil and Geotechnical/Geological Analysis
- Interpret Environmental Studies
- Interpret Economic Analysis

Section 4 - Grading, Drainage, and Construction Documentation

Tests KSAs required to manipulate the surface of the land and constructed features to meet design objectives and to direct surface and subsurface water. The grading portions of the section require examinees to manipulate contours and spot elevations, calculate slopes, grades, and volumes of material, facilitate the removal of stormwater, and change the elevations of the existing landscape to accommodate buildings, structures, and vehicular and pedestrian circulation systems. The drainage portions of the section test the ability to design surface and subsurface storm drainage systems, including hydraulic characteristics and storm drain connections, to effectively and safely manage stormwater.

16. [Take the Exam FAQs \(clarb.org\)](https://clarb.org/take-the-exam-faqs)

17. [Landscape Architect Registration Examination \(clarb.org\)](https://clarb.org/landscape-architect-registration-examination)

18. See Appendix B for full listing of LARE content.

KSAs tested in Section 4 include:

- Prepare Soil Boring Location Plan
- Develop Stormwater Pollution Prevention Plan
- Develop Site Protection Plan
- Develop Mitigation Plan
- Develop Grading and Drainage Plan
- Develop Planting Practices, Plans, Notes and Schedules
- Develop Materials Plan
- Prepare Site Infrastructure Plan
- Develop Irrigation Plan
- Prepare Lighting Plan
- Prepare Stormwater Management Plan



4. Comparing Landscape Architecture to Currently Recognized STEM Disciplines

The Department of Homeland Security (DHS) is currently reviewing a recommendation from ASLA to include landscape architecture on the STEM Designated Degree Program list. Numerous allied disciplines already are found on the DHS-approved list, including environmental studies, environmental science, plant science, urban forestry, natural resources conservation, engineering, and others.

In fact, landscape architecture degree programs across the country include as much or more STEM content as degree programs for many of these currently recognized disciplines.

Landscape architects apply in depth knowledge of math, engineering, and technology, along with soil, material, and natural sciences, to ensure landscapes manage water safely and sustainably.

Image credit: 2020 ASLA Professional General Design Honor Award. Designing, Implementing, and Managing Improvements to the National Mall. HOK.

A 2019 analysis of two such programs—environmental studies (CIP code 3.0103) and sustainability studies (CIP code 30.3301)—in comparison with a highly ranked landscape architecture program reveals that the landscape architecture program has higher overall STEM content than those on the DHS-approved list.

19. Barth, Brian. Landscape Architecture STEM Graduate Curriculum Comparison [unpublished research]. 2019.

The study compared the Master of Landscape Architecture (MLA) Program at Harvard University with the Master of Environmental Studies (MES) Program at the University of Pennsylvania and the Master of Sustainability (MAS) Program at Arizona State University, finding higher overall STEM content in the required course material of the landscape architecture program. (See Table 1)

A review of the curriculum structure for each program, including a class-by-class analysis of STEM content, was used to designate each class—whether a required course or an optional course/elective—as being either “STEM-focused,” including “some STEM content,” or including “little to no STEM content.” This analysis clearly demonstrates the breadth of STEM content for the landscape architecture program in comparison to other STEM-designated programs.

STEM Graduate Curriculum Comparison¹⁹

	Required STEM-focused courses	Required courses with some STEM content	Optional courses that may include STEM content	Required or optional courses with little or no STEM content
MLA - Harvard	13%	47%	33%	7%
MES - UPenn	8%	17%	75%	-
MAS - ASU	-	16%	49%	35%

5. Current Governmental Landscape Architecture STEM Designations

5.1 Federal Designations of Landscape Architecture as STEM

As noted earlier, the Bureau of Labor Statistics Standard Occupational Classification (SOC) System has recognized—and OMB has approved—landscape architecture as a science and engineering related domain since 2012.

Specifically, landscape architecture is listed under 17-0000 Architecture and Engineering Occupations. This system is used by the federal government to classify workers into occupational categories. Detailed occupations in the SOC

with similar job duties, and in some cases, skills, education, and/or training, are grouped together. Under this system, landscape architecture is grouped with civil engineers, architectural and civil drafters, environmental engineers, and surveyors, all of which are included on the DHS STEM Designated Degree Program List.

20. [stem-occupations-in-new-york-state.pdf \(ny.gov\)](#)

21. [Connecticut Careers in Science, Technology, Engineering, and Mathematics - STEM \(state.ct.us\)](#)

22. [Current-PSE-list-approved-by-the-BOG-at-its-September-2020-meeting-PDF.pdf \(flbog.edu\)](#)

5.2 State Designations of Landscape Architecture as STEM:

While not all states have developed their own lists of STEM disciplines, there are at least three states that formally define landscape architecture as a STEM discipline. The Departments of Labor in both New York²⁰ and Connecticut²¹ recognize landscape architecture as a STEM profession. Additionally, the state of Florida recognizes landscape architecture as a STEM degree program through the Board of Governors' State University System's list of "Programs of Strategic Emphasis." The fundamental purpose of the "Programs of Strategic Emphasis" is to promote the alignment of the State University System's degree program offerings with the state's economic and workforce needs.²²



Conclusion

Increased emphasis in recent years on the impacts of natural and built landscapes on the planet's climate and human health and well-being has underscored the need for landscape architecture professionals educated and trained in the natural, physical, and human sciences to solve increasingly complex planning and design problems. Efforts to conserve water, prevent water pollution, mitigate flooding, protect and preserve ecosystems, and protect the health and safety of

Landscape architects plan and design landscapes that provide research opportunities on water management through green infrastructure solutions.

Image credit: 2020 ASLA Professional Research Honor Award. Weather-Smithing: Assessing the role of vegetation, soil, and adaptive management in urban green infrastructure performance. Andropogon Associates.

the public are central to the practice of landscape architecture, and all require extensive education and training in the sciences, technology, engineering, and mathematics.

The landscape architecture profession has responded to this need by intensifying efforts to center landscape architecture education around STEM disciplines, from hydrology and botany to engineering and sustainability studies. Likewise, the landscape architecture licensure examination required by all 50 states and the District of Columbia demands extensive knowledge of STEM subjects from those who take it. In fact, as ASLA's review of landscape architecture and similar post-secondary programs indicates, landscape architecture education contains as much if not more STEM content than several disciplines that are currently defined as STEM.

In addition, the increasing number of federal and state government bodies defining landscape architecture as a STEM profession demonstrates the primary role that the sciences play in preparing landscape architects to innovatively address some of the nation's most complex and challenging problems.

The principles of STEM constitute the foundation of the academic criteria and professional practice of landscape architecture. Through advocacy, communication, and research, ASLA will continue to raise the visibility of the profession's innate STEM qualities and practice areas with federal, state, and local stakeholders, the STEM community, and the general public.

Appendices

Appendix A

Bureau of Labor Statistics SOC (Standard Occupational Classification) Policy Committee, June 2019, https://www.bls.gov/soc/Attachment_C_STEM_2018.pdf

Appendix B

LARE Orientation: Understanding the Landscape Architect Registration Examination, Council of Landscape Architectural Registration Boards (CLARB), October 2020

<https://www.clarb.org/docs/default-source/take-the-exam/lareorientationguide.pdf?sfvrsn=4>

Appendix C

ASLA Survey of Landscape Architecture Schools, May 2021. Charts assembled by Agora Consulting, June 2021

Appendix A

Bureau of Labor Statistics SOC (Standard Occupational Classification)
Policy Committee

Key	Sub-domain	
	1	Life and Physical Science, Engineering, Mathematics, and Information Technology Occupations
	2	Social Science Occupations
	3	Architecture Occupations
	4	Health Occupations
	Split across 2 sub-domains or type of occupation	
	Types of occupations	
	A	Research, Development, Design, or Practitioner Occupations
	B	Technologist and Technician Occupations
	C	Postsecondary Teaching Occupations
	D	Managerial Occupations
	E	Sales Occupations
Sub-domain and Type of Occupation	2018 SOC code	2018 SOC code
	11-1011	Chief Executives
	11-1021	General and Operations Managers
	11-1031	Legislators
	11-2011	Advertising and Promotions Managers
	11-2021	Marketing Managers
	11-2022	Sales Managers
	11-2032	Public Relations Managers
	11-2033	Fundraising Managers
	11-3012	Administrative Services Managers
	11-3013	Facilities Managers
1.D	11-3021	Computer and Information Systems Managers
	11-3031	Financial Managers
	11-3051	Industrial Production Managers
	11-3061	Purchasing Managers
	11-3071	Transportation, Storage, and Distribution Managers
	11-3111	Compensation and Benefits Managers
	11-3121	Human Resources Managers
	11-3131	Training and Development Managers
	11-9013	Farmers, Ranchers, and Other Agricultural Managers
	11-9021	Construction Managers
	11-9031	Education and Childcare Administrators, Preschool and Daycare
	11-9032	Education Administrators, Kindergarten through Secondary
	11-9033	Education Administrators, Postsecondary
	11-9039	Education Administrators, All Other
1.D and 3.D	11-9041	Architectural and Engineering Managers
	11-9051	Food Service Managers
	11-9071	Gambling Managers
	11-9072	Entertainment and Recreation Managers, Except Gambling
	11-9081	Lodging Managers
4.D	11-9111	Medical and Health Services Managers
1.D	11-9121	Natural Sciences Managers
	11-9131	Postmasters and Mail Superintendents
	11-9141	Property, Real Estate, and Community Association Managers
	11-9151	Social and Community Service Managers
	11-9161	Emergency Management Directors
	11-9171	Funeral Home Managers
	11-9179	Personal Service Managers, All Other
	11-9199	Managers, All Other

	13-1011	Agents and Business Managers of Artists, Performers, and Athletes
	13-1021	Buyers and Purchasing Agents, Farm Products
	13-1022	Wholesale and Retail Buyers, Except Farm Products
	13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products
	13-1031	Claims Adjusters, Examiners, and Investigators
	13-1032	Insurance Appraisers, Auto Damage
	13-1041	Compliance Officers
	13-1051	Cost Estimators
	13-1071	Human Resources Specialists
	13-1074	Farm Labor Contractors
	13-1075	Labor Relations Specialists
	13-1081	Logisticians
	13-1082	Project Management Specialists
	13-1111	Management Analysts
	13-1121	Meeting, Convention, and Event Planners
	13-1131	Fundraisers
	13-1141	Compensation, Benefits, and Job Analysis Specialists
	13-1151	Training and Development Specialists
	13-1161	Market Research Analysts and Marketing Specialists
	13-1199	Business Operations Specialists, All Other
	13-2011	Accountants and Auditors
	13-2022	Appraisers of Personal and Business Property
	13-2023	Appraisers and Assessors of Real Estate
	13-2031	Budget Analysts
	13-2041	Credit Analysts
	13-2051	Financial and Investment Analysts
	13-2052	Personal Financial Advisors
	13-2053	Insurance Underwriters
	13-2054	Financial Risk Specialists
	13-2061	Financial Examiners
	13-2071	Credit Counselors
	13-2072	Loan Officers
	13-2081	Tax Examiners and Collectors, and Revenue Agents
	13-2082	Tax Preparers
	13-2099	Financial Specialists, All Other
1.A	15-1211	Computer Systems Analysts
1.A	15-1212	Information Security Analysts
1.A	15-1221	Computer and Information Research Scientists
1.B	15-1231	Computer Network Support Specialists
1.B	15-1232	Computer User Support Specialists
1.A	15-1241	Computer Network Architects
1.A	15-1242	Database Administrators
1.A	15-1243	Database Architects
1.A	15-1244	Network and Computer Systems Administrators
1.A	15-1251	Computer Programmers
1.A	15-1252	Software Developers
1.A	15-1253	Software Quality Assurance Analysts and Testers
1.A	15-1254	Web Developers
1.A	15-1255	Web and Digital Interface Designers
1.A and 1.B	15-1299	Computer Occupations, All Other
1.A	15-2011	Actuaries
1.A	15-2021	Mathematicians
1.A	15-2031	Operations Research Analysts
1.A	15-2041	Statisticians
1.A	15-2051	Data Scientists
1.A and 1.B	15-2099	Mathematical Science Occupations, All Other

3.A	17-1011	Architects, Except Landscape and Naval
3.A	17-1012	Landscape Architects
1.B	17-1021	Cartographers and Photogrammetrists
1.B	17-1022	Surveyors
1.A	17-2011	Aerospace Engineers
1.A	17-2021	Agricultural Engineers
1.A	17-2031	Bioengineers and Biomedical Engineers
1.A	17-2041	Chemical Engineers
1.A	17-2051	Civil Engineers
1.A	17-2061	Computer Hardware Engineers
1.A	17-2071	Electrical Engineers
1.A	17-2072	Electronics Engineers, Except Computer
1.A	17-2081	Environmental Engineers
1.A	17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors
1.A	17-2112	Industrial Engineers
1.A	17-2121	Marine Engineers and Naval Architects
1.A	17-2131	Materials Engineers
1.A	17-2141	Mechanical Engineers
1.A	17-2151	Mining and Geological Engineers, Including Mining Safety Engineers
1.A	17-2161	Nuclear Engineers
1.A	17-2171	Petroleum Engineers
1.A	17-2199	Engineers, All Other
1.B and 3.B	17-3011	Architectural and Civil Drafters
1.B	17-3012	Electrical and Electronics Drafters
1.B	17-3013	Mechanical Drafters
1.B and 3.B	17-3019	Drafters, All Other
1.B	17-3021	Aerospace Engineering and Operations Technologists and Technicians
1.B	17-3022	Civil Engineering Technologists and Technicians
1.B	17-3023	Electrical and Electronic Engineering Technologists and Technicians
1.B	17-3024	Electro-Mechanical and Mechatronics Technologists and Technicians
1.B	17-3025	Environmental Engineering Technologists and Technicians
1.B	17-3026	Industrial Engineering Technologists and Technicians
1.B	17-3027	Mechanical Engineering Technologists and Technicians
1.B	17-3028	Calibration Technologists and Technicians
1.B	17-3029	Engineering Technologists and Technicians, Except Drafters, All Other
1.B	17-3031	Surveying and Mapping Technicians
1.A	19-1011	Animal Scientists
1.A	19-1012	Food Scientists and Technologists
1.A	19-1013	Soil and Plant Scientists
1.A	19-1021	Biochemists and Biophysicists
1.A	19-1022	Microbiologists
1.A	19-1023	Zoologists and Wildlife Biologists
1.A	19-1029	Biological Scientists, All Other
1.A	19-1031	Conservation Scientists
1.A	19-1032	Foresters
1.A	19-1041	Epidemiologists
1.A	19-1042	Medical Scientists, Except Epidemiologists
1.A	19-1099	Life Scientists, All Other
1.A	19-2011	Astronomers
1.A	19-2012	Physicists
1.A	19-2021	Atmospheric and Space Scientists
1.A	19-2031	Chemists
1.A	19-2032	Materials Scientists
1.A	19-2041	Environmental Scientists and Specialists, Including Health
1.A	19-2042	Geoscientists, Except Hydrologists and Geographers
1.A	19-2043	Hydrologists

1.A	19-2099	Physical Scientists, All Other
2.A	19-3011	Economists
2.A	19-3022	Survey Researchers
2.A	19-3032	Industrial-Organizational Psychologists
2.A	19-3033	Clinical and Counseling Psychologists
2.A	19-3034	School Psychologists
2.A	19-3039	Psychologists, All Other
2.A	19-3041	Sociologists
2.A	19-3051	Urban and Regional Planners
2.A	19-3091	Anthropologists and Archeologists
2.A	19-3092	Geographers
	19-3093	Historians
2.A	19-3094	Political Scientists
2.A	19-3099	Social Scientists and Related Workers, All Other
1.B	19-4012	Agricultural Technicians
1.B	19-4013	Food Science Technicians
1.B	19-4021	Biological Technicians
1.B	19-4031	Chemical Technicians
1.B	19-4042	Environmental Science and Protection Technicians, Including Health
1.B	19-4043	Geological Technicians, Except Hydrologic Technicians
1.B	19-4044	Hydrologic Technicians
1.B	19-4051	Nuclear Technicians
2.B	19-4061	Social Science Research Assistants
1.B	19-4071	Forest and Conservation Technicians
1.B	19-4092	Forensic Science Technicians
1.B and 2.B	19-4099	Life, Physical, and Social Science Technicians, All Other
	19-5011	Occupational Health and Safety Specialists
	19-5012	Occupational Health and Safety Technicians
	21-1011	Substance Abuse and Behavioral Disorder Counselors
	21-1012	Educational, Guidance, and Career Counselors and Advisors
	21-1013	Marriage and Family Therapists
	21-1014	Mental Health Counselors
	21-1015	Rehabilitation Counselors
	21-1019	Counselors, All Other
	21-1021	Child, Family, and School Social Workers
	21-1022	Healthcare Social Workers
	21-1023	Mental Health and Substance Abuse Social Workers
	21-1029	Social Workers, All Other
	21-1091	Health Education Specialists
	21-1092	Probation Officers and Correctional Treatment Specialists
	21-1093	Social and Human Service Assistants
	21-1094	Community Health Workers
	21-1099	Community and Social Service Specialists, All Other
	21-2011	Clergy
	21-2021	Directors, Religious Activities and Education
	21-2099	Religious Workers, All Other
	23-1011	Lawyers
	23-1012	Judicial Law Clerks
	23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers
	23-1022	Arbitrators, Mediators, and Conciliators
	23-1023	Judges, Magistrate Judges, and Magistrates
	23-2011	Paralegals and Legal Assistants
	23-2093	Title Examiners, Abstractors, and Searchers
	23-2099	Legal Support Workers, All Other
	25-1011	Business Teachers, Postsecondary
1.C	25-1021	Computer Science Teachers, Postsecondary

1.C	25-1022	Mathematical Science Teachers, Postsecondary
3.C	25-1031	Architecture Teachers, Postsecondary
1.C	25-1032	Engineering Teachers, Postsecondary
1.C	25-1041	Agricultural Sciences Teachers, Postsecondary
1.C	25-1042	Biological Science Teachers, Postsecondary
1.C	25-1043	Forestry and Conservation Science Teachers, Postsecondary
1.C	25-1051	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary
1.C	25-1052	Chemistry Teachers, Postsecondary
1.C	25-1053	Environmental Science Teachers, Postsecondary
1.C	25-1054	Physics Teachers, Postsecondary
2.C	25-1061	Anthropology and Archeology Teachers, Postsecondary
2.C	25-1062	Area, Ethnic, and Cultural Studies Teachers, Postsecondary
2.C	25-1063	Economics Teachers, Postsecondary
2.C	25-1064	Geography Teachers, Postsecondary
2.C	25-1065	Political Science Teachers, Postsecondary
2.C	25-1066	Psychology Teachers, Postsecondary
2.C	25-1067	Sociology Teachers, Postsecondary
2.C	25-1069	Social Sciences Teachers, Postsecondary, All Other
4.C	25-1071	Health Specialties Teachers, Postsecondary
4.C	25-1072	Nursing Instructors and Teachers, Postsecondary
	25-1081	Education Teachers, Postsecondary
	25-1082	Library Science Teachers, Postsecondary
	25-1111	Criminal Justice and Law Enforcement Teachers, Postsecondary
	25-1112	Law Teachers, Postsecondary
	25-1113	Social Work Teachers, Postsecondary
	25-1121	Art, Drama, and Music Teachers, Postsecondary
	25-1122	Communications Teachers, Postsecondary
	25-1123	English Language and Literature Teachers, Postsecondary
	25-1124	Foreign Language and Literature Teachers, Postsecondary
	25-1125	History Teachers, Postsecondary
	25-1126	Philosophy and Religion Teachers, Postsecondary
	25-1192	Family and Consumer Sciences Teachers, Postsecondary
	25-1193	Recreation and Fitness Studies Teachers, Postsecondary
	25-1194	Career/Technical Education Teachers, Postsecondary
	25-1199	Postsecondary Teachers, All Other
	25-2011	Preschool Teachers, Except Special Education
	25-2012	Kindergarten Teachers, Except Special Education
	25-2021	Elementary School Teachers, Except Special Education
	25-2022	Middle School Teachers, Except Special and Career/Technical Education
	25-2023	Career/Technical Education Teachers, Middle School
	25-2031	Secondary School Teachers, Except Special and Career/Technical Education
	25-2032	Career/Technical Education Teachers, Secondary School
	25-2051	Special Education Teachers, Preschool
	25-2055	Special Education Teachers, Kindergarten
	25-2056	Special Education Teachers, Elementary School
	25-2057	Special Education Teachers, Middle School
	25-2058	Special Education Teachers, Secondary School
	25-2059	Special Education Teachers, All Other
	25-3011	Adult Basic Education, Adult Secondary Education, and English as a Second Language Instructors
	25-3021	Self-Enrichment Teachers
	25-3031	Substitute Teachers, Short-Term
	25-3041	Tutors
	25-3099	Teachers and Instructors, All Other
	25-4011	Archivists
	25-4012	Curators
	25-4013	Museum Technicians and Conservators

25-4022	Librarians and Media Collections Specialists
25-4031	Library Technicians
25-9021	Farm and Home Management Educators
25-9031	Instructional Coordinators
25-9042	Teaching Assistants, Preschool, Elementary, Middle, and Secondary School, Except Special Education
25-9043	Teaching Assistants, Special Education
25-9044	Teaching Assistants, Postsecondary
25-9049	Teaching Assistants, All Other
25-9099	Educational Instruction and Library Workers, All Other
27-1011	Art Directors
27-1012	Craft Artists
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators
27-1014	Special Effects Artists and Animators
27-1019	Artists and Related Workers, All Other
27-1021	Commercial and Industrial Designers
27-1022	Fashion Designers
27-1023	Floral Designers
27-1024	Graphic Designers
27-1025	Interior Designers
27-1026	Merchandise Displayers and Window Trimmers
27-1027	Set and Exhibit Designers
27-1029	Designers, All Other
27-2011	Actors
27-2012	Producers and Directors
27-2021	Athletes and Sports Competitors
27-2022	Coaches and Scouts
27-2023	Umpires, Referees, and Other Sports Officials
27-2031	Dancers
27-2032	Choreographers
27-2041	Music Directors and Composers
27-2042	Musicians and Singers
27-2091	Disc Jockeys, Except Radio
27-2099	Entertainers and Performers, Sports and Related Workers, All Other
27-3011	Broadcast Announcers and Radio Disc Jockeys
27-3023	News Analysts, Reporters, and Journalists
27-3031	Public Relations Specialists
27-3041	Editors
27-3042	Technical Writers
27-3043	Writers and Authors
27-3091	Interpreters and Translators
27-3092	Court Reporters and Simultaneous Captioners
27-3099	Media and Communication Workers, All Other
27-4011	Audio and Video Technicians
27-4012	Broadcast Technicians
27-4014	Sound Engineering Technicians
27-4015	Lighting Technicians
27-4021	Photographers
27-4031	Camera Operators, Television, Video, and Film
27-4032	Film and Video Editors
27-4099	Media and Communication Equipment Workers, All Other
4.A	29-1011 Chiropractors
4.A	29-1021 Dentists, General
4.A	29-1022 Oral and Maxillofacial Surgeons
4.A	29-1023 Orthodontists
4.A	29-1024 Prosthodontists
4.A	29-1029 Dentists, All Other Specialists

4.A	29-1031	Dietitians and Nutritionists
4.A	29-1041	Optometrists
4.A	29-1051	Pharmacists
4.A	29-1071	Physician Assistants
4.A	29-1081	Podiatrists
4.A	29-1122	Occupational Therapists
4.A	29-1123	Physical Therapists
4.A	29-1124	Radiation Therapists
4.A	29-1125	Recreational Therapists
4.A	29-1126	Respiratory Therapists
4.A	29-1127	Speech-Language Pathologists
4.A	29-1128	Exercise Physiologists
4.A	29-1129	Therapists, All Other
4.A	29-1131	Veterinarians
4.A	29-1141	Registered Nurses
4.A	29-1151	Nurse Anesthetists
4.A	29-1161	Nurse Midwives
4.A	29-1171	Nurse Practitioners
4.A	29-1181	Audiologists
4.A	29-1211	Anesthesiologists
4.A	29-1212	Cardiologists
4.A	29-1213	Dermatologists
4.A	29-1214	Emergency Medicine Physicians
4.A	29-1215	Family Medicine Physicians
4.A	29-1216	General Internal Medicine Physicians
4.A	29-1217	Neurologists
4.A	29-1218	Obstetricians and Gynecologists
4.A	29-1221	Pediatricians, General
4.A	29-1222	Physicians, Pathologists
4.A	29-1223	Psychiatrists
4.A	29-1224	Radiologists
4.A	29-1229	Physicians, All Other
4.A	29-1241	Ophthalmologists, Except Pediatric
4.A	29-1242	Orthopedic Surgeons, Except Pediatric
4.A	29-1243	Pediatric Surgeons
4.A	29-1249	Surgeons, All Other
4.A	29-1291	Acupuncturists
4.A	29-1292	Dental Hygienists
4.A	29-1299	Healthcare Diagnosing or Treating Practitioners, All Other
4.B	29-2011	Medical and Clinical Laboratory Technologists
4.B	29-2012	Medical and Clinical Laboratory Technicians
4.B	29-2031	Cardiovascular Technologists and Technicians
4.B	29-2032	Diagnostic Medical Sonographers
4.B	29-2033	Nuclear Medicine Technologists
4.B	29-2034	Radiologic Technologists and Technicians
4.B	29-2035	Magnetic Resonance Imaging Technologists
4.B	29-2036	Medical Dosimetrists
4.B	29-2042	Emergency Medical Technicians
4.B	29-2043	Paramedics
4.B	29-2051	Dietetic Technicians
4.B	29-2052	Pharmacy Technicians
4.B	29-2053	Psychiatric Technicians
4.B	29-2055	Surgical Technologists
4.B	29-2056	Veterinary Technologists and Technicians
4.B	29-2057	Ophthalmic Medical Technicians
4.B	29-2061	Licensed Practical and Licensed Vocational Nurses

4.B	29-2072	Medical Records Specialists
4.B	29-2081	Opticians, Dispensing
4.B	29-2091	Orthotists and Prosthetists
4.B	29-2092	Hearing Aid Specialists
4.B	29-2099	Health Technologists and Technicians, All Other
4.A and 4.B	29-9021	Health Information Technologists and Medical Registrars
4.A	29-9091	Athletic Trainers
4.A	29-9092	Genetic Counselors
4.A	29-9093	Surgical Assistants
4.A and 4.B	29-9099	Healthcare Practitioners and Technical Workers, All Other
	31-1121	Home Health Aides
	31-1122	Personal Care Aides
	31-1131	Nursing Assistants
	31-1132	Orderlies
	31-1133	Psychiatric Aides
	31-2011	Occupational Therapy Assistants
	31-2012	Occupational Therapy Aides
	31-2021	Physical Therapist Assistants
	31-2022	Physical Therapist Aides
	31-9011	Massage Therapists
	31-9091	Dental Assistants
	31-9092	Medical Assistants
	31-9093	Medical Equipment Preparers
	31-9094	Medical Transcriptionists
	31-9095	Pharmacy Aides
	31-9096	Veterinary Assistants and Laboratory Animal Caretakers
	31-9097	Phlebotomists
	31-9099	Healthcare Support Workers, All Other
	33-1011	First-Line Supervisors of Correctional Officers
	33-1012	First-Line Supervisors of Police and Detectives
	33-1021	First-Line Supervisors of Firefighting and Prevention Workers
	33-1091	First-Line Supervisors of Security Workers
	33-1099	First-Line Supervisors of Protective Service Workers, All Other
	33-2011	Firefighters
	33-2021	Fire Inspectors and Investigators
	33-2022	Forest Fire Inspectors and Prevention Specialists
	33-3011	Bailiffs
	33-3012	Correctional Officers and Jailers
	33-3021	Detectives and Criminal Investigators
	33-3031	Fish and Game Wardens
	33-3041	Parking Enforcement Workers
	33-3051	Police and Sheriff's Patrol Officers
	33-3052	Transit and Railroad Police
	33-9011	Animal Control Workers
	33-9021	Private Detectives and Investigators
	33-9031	Gambling Surveillance Officers and Gambling Investigators
	33-9032	Security Guards
	33-9091	Crossing Guards and Flaggers
	33-9092	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers
	33-9093	Transportation Security Screeners
	33-9094	School Bus Monitors
	33-9099	Protective Service Workers, All Other
	35-1011	Chefs and Head Cooks
	35-1012	First-Line Supervisors of Food Preparation and Serving Workers
	35-2011	Cooks, Fast Food
	35-2012	Cooks, Institution and Cafeteria

35-2013	Cooks, Private Household
35-2014	Cooks, Restaurant
35-2015	Cooks, Short Order
35-2019	Cooks, All Other
35-2021	Food Preparation Workers
35-3011	Bartenders
35-3023	Fast Food and Counter Workers
35-3031	Waiters and Waitresses
35-3041	Food Servers, Nonrestaurant
35-9011	Dining Room and Cafeteria Attendants and Bartender Helpers
35-9021	Dishwashers
35-9031	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop
35-9099	Food Preparation and Serving Related Workers, All Other
37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers
37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners
37-2012	Maids and Housekeeping Cleaners
37-2019	Building Cleaning Workers, All Other
37-2021	Pest Control Workers
37-3011	Landscaping and Groundskeeping Workers
37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation
37-3013	Tree Trimmers and Pruners
37-3019	Grounds Maintenance Workers, All Other
39-1013	First-Line Supervisors of Gambling Services Workers
39-1014	First-Line Supervisors of Entertainment and Recreation Workers, Except Gambling Services
39-1022	First-Line Supervisors of Personal Service Workers
39-2011	Animal Trainers
39-2021	Animal Caretakers
39-3011	Gambling Dealers
39-3012	Gambling and Sports Book Writers and Runners
39-3019	Gambling Service Workers, All Other
39-3021	Motion Picture Projectionists
39-3031	Ushers, Lobby Attendants, and Ticket Takers
39-3091	Amusement and Recreation Attendants
39-3092	Costume Attendants
39-3093	Locker Room, Coatroom, and Dressing Room Attendants
39-3099	Entertainment Attendants and Related Workers, All Other
39-4011	Embalmers
39-4012	Crematory Operators
39-4021	Funeral Attendants
39-4031	Morticians, Undertakers, and Funeral Arrangers
39-5011	Barbers
39-5012	Hairdressers, Hairstylists, and Cosmetologists
39-5091	Makeup Artists, Theatrical and Performance
39-5092	Manicurists and Pedicurists
39-5093	Shampooers
39-5094	Skincare Specialists
39-6011	Baggage Porters and Bellhops
39-6012	Concierges
39-7011	Tour Guides and Escorts
39-7012	Travel Guides
39-9011	Childcare Workers
39-9031	Exercise Trainers and Group Fitness Instructors
39-9032	Recreation Workers
39-9041	Residential Advisors
39-9099	Personal Care and Service Workers, All Other

	41-1011	First-Line Supervisors of Retail Sales Workers
	41-1012	First-Line Supervisors of Non-Retail Sales Workers
	41-2011	Cashiers
	41-2012	Gambling Change Persons and Booth Cashiers
	41-2021	Counter and Rental Clerks
	41-2022	Parts Salespersons
	41-2031	Retail Salespersons
	41-3011	Advertising Sales Agents
	41-3021	Insurance Sales Agents
	41-3031	Securities, Commodities, and Financial Services Sales Agents
	41-3041	Travel Agents
	41-3091	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel
1.E	41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products
	41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products
	41-9011	Demonstrators and Product Promoters
	41-9012	Models
	41-9021	Real Estate Brokers
	41-9022	Real Estate Sales Agents
1.E	41-9031	Sales Engineers
	41-9041	Telemarketers
	41-9091	Door-to-Door Sales Workers, News and Street Vendors, and Related Workers
	41-9099	Sales and Related Workers, All Other
	43-1011	First-Line Supervisors of Office and Administrative Support Workers
	43-2011	Switchboard Operators, Including Answering Service
	43-2021	Telephone Operators
	43-2099	Communications Equipment Operators, All Other
	43-3011	Bill and Account Collectors
	43-3021	Billing and Posting Clerks
	43-3031	Bookkeeping, Accounting, and Auditing Clerks
	43-3041	Gambling Cage Workers
	43-3051	Payroll and Timekeeping Clerks
	43-3061	Procurement Clerks
	43-3071	Tellers
	43-3099	Financial Clerks, All Other
	43-4011	Brokerage Clerks
	43-4021	Correspondence Clerks
	43-4031	Court, Municipal, and License Clerks
	43-4041	Credit Authorizers, Checkers, and Clerks
	43-4051	Customer Service Representatives
	43-4061	Eligibility Interviewers, Government Programs
	43-4071	File Clerks
	43-4081	Hotel, Motel, and Resort Desk Clerks
	43-4111	Interviewers, Except Eligibility and Loan
	43-4121	Library Assistants, Clerical
	43-4131	Loan Interviewers and Clerks
	43-4141	New Accounts Clerks
	43-4151	Order Clerks
	43-4161	Human Resources Assistants, Except Payroll and Timekeeping
	43-4171	Receptionists and Information Clerks
	43-4181	Reservation and Transportation Ticket Agents and Travel Clerks
	43-4199	Information and Record Clerks, All Other
	43-5011	Cargo and Freight Agents
	43-5021	Couriers and Messengers
	43-5031	Public Safety Telecommunicators
	43-5032	Dispatchers, Except Police, Fire, and Ambulance
	43-5041	Meter Readers, Utilities

43-5051	Postal Service Clerks
43-5052	Postal Service Mail Carriers
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators
43-5061	Production, Planning, and Expediting Clerks
43-5071	Shipping, Receiving, and Inventory Clerks
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping
43-6011	Executive Secretaries and Executive Administrative Assistants
43-6012	Legal Secretaries and Administrative Assistants
43-6013	Medical Secretaries and Administrative Assistants
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive
43-9021	Data Entry Keyers
43-9022	Word Processors and Typists
43-9031	Desktop Publishers
43-9041	Insurance Claims and Policy Processing Clerks
43-9051	Mail Clerks and Mail Machine Operators, Except Postal Service
43-9061	Office Clerks, General
43-9071	Office Machine Operators, Except Computer
43-9081	Proofreaders and Copy Markers
43-9111	Statistical Assistants
43-9199	Office and Administrative Support Workers, All Other
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers
45-2011	Agricultural Inspectors
45-2021	Animal Breeders
45-2041	Graders and Sorters, Agricultural Products
45-2091	Agricultural Equipment Operators
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse
45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals
45-2099	Agricultural Workers, All Other
45-3031	Fishing and Hunting Workers
45-4011	Forest and Conservation Workers
45-4021	Fallers
45-4022	Logging Equipment Operators
45-4023	Log Graders and Scalers
45-4029	Logging Workers, All Other
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers
47-2011	Boilermakers
47-2021	Brickmasons and Blockmasons
47-2022	Stonemasons
47-2031	Carpenters
47-2041	Carpet Installers
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles
47-2043	Floor Sanders and Finishers
47-2044	Tile and Stone Setters
47-2051	Cement Masons and Concrete Finishers
47-2053	Terrazzo Workers and Finishers
47-2061	Construction Laborers
47-2071	Paving, Surfacing, and Tamping Equipment Operators
47-2072	Pile Driver Operators
47-2073	Operating Engineers and Other Construction Equipment Operators
47-2081	Drywall and Ceiling Tile Installers
47-2082	Tapers
47-2111	Electricians
47-2121	Glaziers
47-2131	Insulation Workers, Floor, Ceiling, and Wall
47-2132	Insulation Workers, Mechanical
47-2141	Painters, Construction and Maintenance

47-2142	Paperhangers
47-2151	Pipelayers
47-2152	Plumbers, Pipefitters, and Steamfitters
47-2161	Plasterers and Stucco Masons
47-2171	Reinforcing Iron and Rebar Workers
47-2181	Roofers
47-2211	Sheet Metal Workers
47-2221	Structural Iron and Steel Workers
47-2231	Solar Photovoltaic Installers
47-3011	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters
47-3012	Helpers--Carpenters
47-3013	Helpers--Electricians
47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters
47-3016	Helpers--Roofers
47-3019	Helpers, Construction Trades, All Other
47-4011	Construction and Building Inspectors
47-4021	Elevator and Escalator Installers and Repairers
47-4031	Fence Erectors
47-4041	Hazardous Materials Removal Workers
47-4051	Highway Maintenance Workers
47-4061	Rail-Track Laying and Maintenance Equipment Operators
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners
47-4091	Segmental Pavers
47-4099	Construction and Related Workers, All Other
47-5011	Derrick Operators, Oil and Gas
47-5012	Rotary Drill Operators, Oil and Gas
47-5013	Service Unit Operators, Oil and Gas
47-5022	Excavating and Loading Machine and Dragline Operators, Surface Mining
47-5023	Earth Drillers, Except Oil and Gas
47-5032	Explosives Workers, Ordnance Handling Experts, and Blasters
47-5041	Continuous Mining Machine Operators
47-5043	Roof Bolters, Mining
47-5044	Loading and Moving Machine Operators, Underground Mining
47-5049	Underground Mining Machine Operators, All Other
47-5051	Rock Splitters, Quarry
47-5071	Roustabouts, Oil and Gas
47-5081	Helpers--Extraction Workers
47-5099	Extraction Workers, All Other
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers
49-2011	Computer, Automated Teller, and Office Machine Repairers
49-2021	Radio, Cellular, and Tower Equipment Installers and Repairers
49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers
49-2091	Avionics Technicians
49-2092	Electric Motor, Power Tool, and Related Repairers
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay
49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles
49-2097	Audiovisual Equipment Installers and Repairers
49-2098	Security and Fire Alarm Systems Installers
49-3011	Aircraft Mechanics and Service Technicians
49-3021	Automotive Body and Related Repairers
49-3022	Automotive Glass Installers and Repairers
49-3023	Automotive Service Technicians and Mechanics
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists

49-3041	Farm Equipment Mechanics and Service Technicians
49-3042	Mobile Heavy Equipment Mechanics, Except Engines
49-3043	Rail Car Repairers
49-3051	Motorboat Mechanics and Service Technicians
49-3052	Motorcycle Mechanics
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics
49-3091	Bicycle Repairers
49-3092	Recreational Vehicle Service Technicians
49-3093	Tire Repairers and Changers
49-9011	Mechanical Door Repairers
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers
49-9031	Home Appliance Repairers
49-9041	Industrial Machinery Mechanics
49-9043	Maintenance Workers, Machinery
49-9044	Millwrights
49-9045	Refractory Materials Repairers, Except Brickmasons
49-9051	Electrical Power-Line Installers and Repairers
49-9052	Telecommunications Line Installers and Repairers
49-9061	Camera and Photographic Equipment Repairers
49-9062	Medical Equipment Repairers
49-9063	Musical Instrument Repairers and Tuners
49-9064	Watch and Clock Repairers
49-9069	Precision Instrument and Equipment Repairers, All Other
49-9071	Maintenance and Repair Workers, General
49-9081	Wind Turbine Service Technicians
49-9091	Coin, Vending, and Amusement Machine Servicers and Repairers
49-9092	Commercial Divers
49-9094	Locksmiths and Safe Repairers
49-9095	Manufactured Building and Mobile Home Installers
49-9096	Riggers
49-9097	Signal and Track Switch Repairers
49-9098	Helpers--Installation, Maintenance, and Repair Workers
49-9099	Installation, Maintenance, and Repair Workers, All Other
51-1011	First-Line Supervisors of Production and Operating Workers
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers
51-2021	Coil Winders, Tapers, and Finishers
51-2022	Electrical and Electronic Equipment Assemblers
51-2023	Electromechanical Equipment Assemblers
51-2031	Engine and Other Machine Assemblers
51-2041	Structural Metal Fabricators and Fitters
51-2051	Fiberglass Laminators and Fabricators
51-2061	Timing Device Assemblers and Adjusters
51-2092	Team Assemblers
51-2099	Assemblers and Fabricators, All Other
51-3011	Bakers
51-3021	Butchers and Meat Cutters
51-3022	Meat, Poultry, and Fish Cutters and Trimmers
51-3023	Slaughterers and Meat Packers
51-3091	Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders
51-3092	Food Batchmakers
51-3093	Food Cooking Machine Operators and Tenders
51-3099	Food Processing Workers, All Other
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic
51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic
51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic

51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic
51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic
51-4041	Machinists
51-4051	Metal-Refining Furnace Operators and Tenders
51-4052	Pourers and Casters, Metal
51-4061	Model Makers, Metal and Plastic
51-4062	Patternmakers, Metal and Plastic
51-4071	Foundry Mold and Coremakers
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic
51-4111	Tool and Die Makers
51-4121	Welders, Cutters, Solderers, and Brazers
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders
51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic
51-4192	Layout Workers, Metal and Plastic
51-4193	Plating Machine Setters, Operators, and Tenders, Metal and Plastic
51-4194	Tool Grinders, Filers, and Sharpeners
51-4199	Metal Workers and Plastic Workers, All Other
51-5111	Prepress Technicians and Workers
51-5112	Printing Press Operators
51-5113	Print Binding and Finishing Workers
51-6011	Laundry and Dry-Cleaning Workers
51-6021	Pressers, Textile, Garment, and Related Materials
51-6031	Sewing Machine Operators
51-6041	Shoe and Leather Workers and Repairers
51-6042	Shoe Machine Operators and Tenders
51-6051	Sewers, Hand
51-6052	Tailors, Dressmakers, and Custom Sewers
51-6061	Textile Bleaching and Dyeing Machine Operators and Tenders
51-6062	Textile Cutting Machine Setters, Operators, and Tenders
51-6063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders
51-6064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders
51-6091	Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers
51-6092	Fabric and Apparel Patternmakers
51-6093	Upholsterers
51-6099	Textile, Apparel, and Furnishings Workers, All Other
51-7011	Cabinetmakers and Bench Carpenters
51-7021	Furniture Finishers
51-7031	Model Makers, Wood
51-7032	Patternmakers, Wood
51-7041	Sawing Machine Setters, Operators, and Tenders, Wood
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing
51-7099	Woodworkers, All Other
51-8011	Nuclear Power Reactor Operators
51-8012	Power Distributors and Dispatchers
51-8013	Power Plant Operators
51-8021	Stationary Engineers and Boiler Operators
51-8031	Water and Wastewater Treatment Plant and System Operators
51-8091	Chemical Plant and System Operators
51-8092	Gas Plant Operators
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers
51-8099	Plant and System Operators, All Other
51-9011	Chemical Equipment Operators and Tenders

51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders
51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders
51-9022	Grinding and Polishing Workers, Hand
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders
51-9031	Cutters and Trimmers, Hand
51-9032	Cutting and Slicing Machine Setters, Operators, and Tenders
51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders
51-9051	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers
51-9071	Jewelers and Precious Stone and Metal Workers
51-9081	Dental Laboratory Technicians
51-9082	Medical Appliance Technicians
51-9083	Ophthalmic Laboratory Technicians
51-9111	Packaging and Filling Machine Operators and Tenders
51-9123	Painting, Coating, and Decorating Workers
51-9124	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders
51-9141	Semiconductor Processing Technicians
51-9151	Photographic Process Workers and Processing Machine Operators
51-9161	Computer Numerically Controlled Tool Operators
51-9162	Computer Numerically Controlled Tool Programmers
51-9191	Adhesive Bonding Machine Operators and Tenders
51-9192	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders
51-9193	Cooling and Freezing Equipment Operators and Tenders
51-9194	Etchers and Engravers
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic
51-9196	Paper Goods Machine Setters, Operators, and Tenders
51-9197	Tire Builders
51-9198	Helpers--Production Workers
51-9199	Production Workers, All Other
53-1041	Aircraft Cargo Handling Supervisors
53-1042	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand
53-1043	First-Line Supervisors of Material-Moving Machine and Vehicle Operators
53-1044	First-Line Supervisors of Passenger Attendants
53-1049	First-Line Supervisors of Transportation Workers, All Other
53-2011	Airline Pilots, Copilots, and Flight Engineers
53-2012	Commercial Pilots
53-2021	Air Traffic Controllers
53-2022	Airfield Operations Specialists
53-2031	Flight Attendants
53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians
53-3031	Driver/Sales Workers
53-3032	Heavy and Tractor-Trailer Truck Drivers
53-3033	Light Truck Drivers
53-3051	Bus Drivers, School
53-3052	Bus Drivers, Transit and Intercity
53-3053	Shuttle Drivers and Chauffeurs
53-3054	Taxi Drivers
53-3099	Motor Vehicle Operators, All Other
53-4011	Locomotive Engineers
53-4013	Rail Yard Engineers, Dinkey Operators, and Hostlers
53-4022	Railroad Brake, Signal, and Switch Operators and Locomotive Firers
53-4031	Railroad Conductors and Yardmasters
53-4041	Subway and Streetcar Operators
53-4099	Rail Transportation Workers, All Other
53-5011	Sailors and Marine Oilers
53-5021	Captains, Mates, and Pilots of Water Vessels

53-5022	Motorboat Operators
53-5031	Ship Engineers
53-6011	Bridge and Lock Tenders
53-6021	Parking Attendants
53-6031	Automotive and Watercraft Service Attendants
53-6032	Aircraft Service Attendants
53-6041	Traffic Technicians
53-6051	Transportation Inspectors
53-6061	Passenger Attendants
53-6099	Transportation Workers, All Other
53-7011	Conveyor Operators and Tenders
53-7021	Crane and Tower Operators
53-7031	Dredge Operators
53-7041	Hoist and Winch Operators
53-7051	Industrial Truck and Tractor Operators
53-7061	Cleaners of Vehicles and Equipment
53-7062	Laborers and Freight, Stock, and Material Movers, Hand
53-7063	Machine Feeders and Offbearers
53-7064	Packers and Packagers, Hand
53-7065	Stockers and Order Fillers
53-7071	Gas Compressor and Gas Pumping Station Operators
53-7072	Pump Operators, Except Wellhead Pumpers
53-7073	Wellhead Pumpers
53-7081	Refuse and Recyclable Material Collectors
53-7121	Tank Car, Truck, and Ship Loaders
53-7199	Material Moving Workers, All Other
55-1011	Air Crew Officers
55-1012	Aircraft Launch and Recovery Officers
55-1013	Armored Assault Vehicle Officers
55-1014	Artillery and Missile Officers
55-1015	Command and Control Center Officers
55-1016	Infantry Officers
55-1017	Special Forces Officers
55-1019	Military Officer Special and Tactical Operations Leaders, All Other
55-2011	First-Line Supervisors of Air Crew Members
55-2012	First-Line Supervisors of Weapons Specialists/Crew Members
55-2013	First-Line Supervisors of All Other Tactical Operations Specialists
55-3011	Air Crew Members
55-3012	Aircraft Launch and Recovery Specialists
55-3013	Armored Assault Vehicle Crew Members
55-3014	Artillery and Missile Crew Members
55-3015	Command and Control Center Specialists
55-3016	Infantry
55-3018	Special Forces
55-3019	Military Enlisted Tactical Operations and Air/Weapons Specialists and Crew Members, All Other

Appendix B

**LARE Orientation: Understanding the Landscape Architect Registration Examination,
Council of Landscape Architectural Registration Boards (CLARB)**

Section 1 - Project and Construction Management

85 scored items & 15 [pretest](#) items consisting of [multiple-choice](#) and [multiple-response](#) questions; 3 hours seat time, 2 ½ hours for exam

Pre-Project Management: 10%	Project Management: 30%	Bidding: 20%	Construction: 30%	Maintenance: 10%
<ul style="list-style-type: none"> • Select Project Team • Develop Contract • Negotiate Contract • Prepare RFPs or RFQs • Determine Project Scope, Schedule, and Budget 	<ul style="list-style-type: none"> • Manage Project Team • Manage Project Scope, Schedule, and Budget • Determine Common Goals and Objectives • Establish Quality Control Procedures and Conduct Quality Control Review • Facilitate Meetings Coordinate Work of/with Other Disciplines Document Design Decisions and Project Communication • Execute Records Retention Policy • Facilitate Client Review and Coordination • Obtain Permits • Prepare Cost Estimates • Prepare Project Deliverables 	<ul style="list-style-type: none"> • Develop Bidding Criteria • Prepare and Issue Addenda • Facilitate Meetings • Evaluate Bids and Make Recommendations • Identify Delivery Methods • Evaluate Contractor Qualifications • Assist with Construction Contract Execution and Administration 	<ul style="list-style-type: none"> • Respond to RFIs • Coordinate with Contractors • Facilitate Pre-Construction Meeting • Document Pre-Construction Existing Conditions • Review Submittals • Prepare Change Orders • Conduct and Document Construction-related Actions • Prepare Drawing Revisions or Clarification Sketches • Review and Certify Applications for Payment • Attend Substantial Completion (practical completion) Walkthrough and Prepare Punch List (deficiency list) • Attend Final Completion Walkthrough • Prepare As-Built (record) Drawings • Conduct Warranty Review • Conduct Project Close-out • Collect and Analyze Performance Metrics 	<ul style="list-style-type: none"> • Estimate Maintenance and Management Costs • Prepare Maintenance and Operation Manual • Review Maintenance Services • Prepare Management Plan

Section 2 – Inventory and Analysis

70 scored items & 10 [pretest](#) items consisting of [multiple-choice](#) and [multiple-response](#), 2 ½ hours seat time, 2 hours for the exam

Site Inventory: 35%	Physical Analysis: 40%	Contextual Analysis: 25%
<ul style="list-style-type: none">• Determine Applicable Codes, Regulations, and Permitting Requirements• Collect Contextual Data• Gather Stakeholder Input• Identify Policy Objectives• Conduct Project Related Research• Conduct Onsite Investigation and Fieldwork• Document Site Inventory• Determine Performance Metrics	<ul style="list-style-type: none">• Determine Appropriate Types of Analyses• Perform Circulation Analysis• Interpret Utility Analysis• Perform Visual Resource Analysis• Perform Micro and Macro Climate Analysis• Perform Hydrological Analysis• Perform Vegetation Analysis• Interpret Ecological Analysis• Perform Topographical Analysis• Interpret Soil and Geotechnical/Geological Analysis• Interpret Environmental Studies	<ul style="list-style-type: none">• Analyze Codes, Regulations, and Permitting Requirements for Design Impact• Interpret Cultural, Historical, and Archeological Analysis• Interpret Social Analysis• Interpret Economic Analysis• Analyze Contextual Data• Analyze Stakeholder Feedback

Section 3 – Design

85 scored items & 15 [pretest](#) items consisting of advanced [item types](#), multiple-choice and multiple-response questions; 4 hours seat time, 3 ½ hours for the exam

Stakeholder Process: 9%	Master Planning: 45%	Site Design: 46%
<ul style="list-style-type: none">• Design and Execute Public Participation Process• Prioritize Stakeholder Goals• Initiate Communication Strategy• Synthesize Stakeholder Feedback• Communicate Concept(s)/Schematic(s)	<ul style="list-style-type: none">• Perform Site Analysis and Determine Opportunities and Constraints• Develop Vision or Framework Plan• Develop and Conduct Urban Plan• Develop Land Use Plan• Develop Strategic Implementation Plan• Develop Site Master Plan• Develop Historic/Cultural Restoration and Preservation Plan• Develop Parks, Open Space, and Trails Master Plan• Develop Design Guidelines• Develop a Feasibility Study• Develop View Corridor Plan• Develop Redevelopment Plan• Develop Environmental Resources Plan• Develop Multi-modal Transportation Plan	<ul style="list-style-type: none">• Synthesize and Apply the Site Analysis• Develop and Refine the Program• Create the Basis for the Design• Create Conceptual Design Alternatives and Scenarios• Evaluate Design Alternatives• Refine and Synthesize Concept Alternative• Develop Schematic Design• Prepare Preliminary Quantities and Cost Estimate• Prepare Presentation Drawings and Communication Tools• Compile Materials Sample Board• Identify and Develop Performance Metrics

Section 4 – Grading, Drainage and Construction Documentation

105 scored items & 15 [pretest](#) items consisting of advanced [item types](#), multiple-choice and multiple-response questions; 4 ½ hours seat time, 4 hours for the exam

Site Preparation Plans: 20%	General Plans and Details: 40%	Specialty Plans: 25%	Specifications: 15%
<ul style="list-style-type: none">• Develop Demolition Plan• Develop Existing Conditions Plan• Prepare Soil Boring Location Plan• Develop Stormwater Pollution Prevention Plan• Develop Site Protection Plan• Develop Mitigation Plan	<ul style="list-style-type: none">• Develop Layout Plan• Develop General Notes• Develop Grading and Drainage Plan• Develop Planting Practices, Plans, Notes and Schedules• Develop Materials Plan• Develop Details• Prepare Sections, Elevations, and Profiles• Incorporate Code Requirements• Prepare Summary of Quantities• Prepare Site Infrastructure Plan	<ul style="list-style-type: none">• Develop Phasing Plan• Develop Irrigation Plan• Prepare Lighting Plan• Develop Site Furnishings Plan• Develop Signage and Wayfinding Plan• Develop Traffic Control Plan• Develop Emergency Access Plan• Prepare Stormwater Management Plan	<ul style="list-style-type: none">• Develop Technical Specifications• Prepare Bid Form/Schedule• Develop Project Manual/Front End Specifications

Appendix C

ASLA Survey of Landscape Architecture Schools, May 2021.
Charts assembled by Agora Consulting

AVERAGE NUMBER OF REQUIRED COURSES WITH STEM CONTENT

BLA Programs

	<i>Botany/ Horticulture</i>	<i>Construction Methods and Methods</i>	<i>Ecology</i>	<i>Engineering</i>	<i>Geology</i>	<i>Hydrology</i>	<i>Mathematics</i>	<i>Storm Water Management/Dr ainage</i>	<i>Sustainability Studies</i>	<i>Vehicular and Pedestrian Circulation/ Roadway Alignment & Design</i>
TAMU BLA	5	8	8	2	3	6	2	6	15	5
MSU BLA	4	4	4	4	2	3	2	2	8	1
UTAH BLA	2	3	1	0	1	0	1	1	0	1
UW-Mad	2	1	2	0	0	0	1	1	1	0
ColoSU	8	7	9	10	9	8	6	9	8	8
PennStB	4	2	4	1	1	1	2	1	2	5
AVG	4.2	4.2	4.7	2.8	2.7	3.0	2.3	3.3	5.7	3.3

MLA Programs

	<i>Botany/ Horticulture</i>	<i>Construction Methods and Methods</i>	<i>Ecology</i>	<i>Engineering</i>	<i>Geology</i>	<i>Hydrology</i>	<i>Mathematics</i>	<i>Storm Water Management/Dr ainage</i>	<i>Sustainability Studies</i>	<i>Vehicular and Pedestrian Circulation/ Roadway Alignment & Design</i>
TAMU MLA	3	4	8	8	2	4	2	5	10	6
MSU MLA	2	2	2	2	0	3	1	3	16	1
UTAH MLA	0	1	1	0	0	0	0	1	0	1
PENN	2	1	3	1	1	1	0	1	0	0
RISD MLA	2	5	3	2	0	1	0	1	2	0
PennState	4	2	4	1	0	1	0	1	0	5
UNM	7	6	5	5	3	3	6	3	7	3
UT Austin	1	1	4	1	0	0	0	0	0	1
AVG	2.6	2.8	3.8	2.5	0.8	1.6	1.1	1.9	4.4	2.1

University/Program Reviewed: **Colorado State University BSLA**

Required/optional courses that cover any of the following topics:	Course name(s)	Degree level(s)	Required or Optional?	Number of courses in topic required through all years of program
Botany/Horticulture	BZ120 - Principles of Plant Biology SOCR240 - Introductory Soil Science BZ223 or HORT221 - Plant Identification or Landscape Plants Studio/Lab: LAND240 - Fundamentals of Landscape Design Process Studio/Lab: LAND364 - Design and Nature Studio/Lab: LAND366 - Landscape Design Expression Studio/Lab: LAND 454 - Landscape Field Studies Studio/Lab: LAND447 - Comprehensive Landscape Design	BLA	Required	8
Construction Materials and methods	LAND360 - Basic Landscape Design and Construction LAND363 - Advanced Landscape Site Engineering LAND365 - Landscape Contract Drawing and Specifications LAND368 - Landscape Irrigation and Water Conservation Studio/Lab: LAND230 - Drawing the Landscape Studio/Lab: LAND240 - Fundamentals of Landscape Design Process Studio/Lab: LAND 364 - Design and Nature	BLA	Required	7
Ecology	LAND241 - Environmental Analysis LAND220 - Fundamentals of Ecology LAND444 - Ecology of Landscapes Studio/Lab: LAND110 - Introduction to Landscape Architecture Studio/Lab: LAND240 - Fundamentals of Landscape Design Process Studio/Lab: LAND 364 - Design and Nature Studio/Lab: LAND366 - Landscape Design Expression Studio/Lab: LAND 454 - Landscape Field Studies Studio/Lab: LAND447 - Comprehensive Landscape Design	BLA	Required	9
Engineering	LAND360 - Basic Landscape Design and Construction LAND363 - Advanced Landscape Site Engineering LAND365 - Landscape Contract Drawing and Specifications LAND368 - Landscape Irrigation and Water Conservation LAND510 - Virtual Design Methods Studio/Lab: LAND230 - Drawing the Landscape Studio/Lab: LAND240 - Fundamentals of Landscape Design Process Studio/Lab: LAND 364 - Design and Nature Studio/Lab: LAND446 - Urban Design Studio/Lab: LAND447 - Comprehensive Landscape Design	BLA	Required	10
Geology	GEOL120 or 122 - Exploring Earth / The Blue Planet GEOL121 - Introductory Geology Laboratory NR319 or NR323 - Geospatial Applications OR Remote Sensing of Natural Resources LAND520 - Geographical Information Systems Studio/Lab: LAND240 - Fundamentals of Landscape Design Process Studio/Lab: LAND364 - Design and Nature Studio/Lab: LAND366 - Landscape Design Expression Studio/Lab: LAND 454 - Landscape Field Studies Studio/Lab: LAND447 - Comprehensive Landscape Design	BLA	Required	9

Hydrology	LAND360 - Basic Landscape Design and Construction LAND363 - Advanced Landscape Site Engineering LAND368 - Landscape Irrigation and Water Conservation Studio/Lab: LAND240 - Fundamentals of Landscape Design Process Studio/Lab: LAND364 - Design and Nature Studio/Lab: LAND366 - Landscape Design Expression Studio/Lab: LAND 454 - Landscape Field Studies Studio/Lab: LAND447 - Comprehensive Landscape Design	BLA	Required	8
Mathematics	MATH126 - Analytical Trigonometry LAND360 - Basic Landscape Design and Construction LAND363 - Advanced Landscape Site Engineering ECON202 or AREC202 Principles of Microeconomics – or – Ag. and Resource Economics Studio/Lab: LAND230 - Drawing the Landscape Studio/Lab: LAND447 - Comprehensive Landscape Design	BLA	Required	6
Stormwater management/drainage	LAND360 - Basic Landscape Design and Construction LAND363 - Advanced Landscape Site Engineering LAND368 - Landscape Irrigation and Water Conservation Studio/Lab: LAND110 - Introduction to Landscape Architecture Studio/Lab: LAND240 - Fundamentals of Landscape Design Process Studio/Lab: LAND364 - Design and Nature Studio/Lab: LAND366 - Landscape Design Expression Studio/Lab: LAND 454 - Landscape Field Studies Studio/Lab: LAND447 - Comprehensive Landscape Design	BLA	Required	9
Sustainability Studies	LAND360 - Basic Landscape Design and Construction LAND368 - Landscape Irrigation and Water Conservation Studio/Lab: LAND110 - Introduction to Landscape Architecture Studio/Lab: LAND240 - Fundamentals of Landscape Design Process Studio/Lab: LAND364 - Design and Nature Studio/Lab: LAND366 - Landscape Design Expression Studio/Lab: LAND 454 - Landscape Field Studies Studio/Lab: LAND447 - Comprehensive Landscape Design	BLA	Required	8
Vehicular and pedestrian circulation/roadway alignment design	LAND360 - Basic Landscape Design and Construction LAND363 - Advanced Landscape Site Engineering Studio/Lab: LAND110 - Introduction to Landscape Architecture Studio/Lab: LAND240 - Fundamentals of Landscape Design Process Studio/Lab: LAND364 - Design and Nature Studio/Lab: LAND366 - Landscape Design Expression Studio/Lab: LAND446 - Urban Design Studio/Lab: LAND447 - Comprehensive Landscape Design	BLA	Required	8

University/Program Reviewed: Mississippi State BLA

Required/optional courses that cover any of the following topics:	Course name(s)	Degree level(s)	Required or Optional?	Number of courses in topic required through all years of program
Botany/Horticulture	LA 1333 Landscape Systems and Plant Communities	BLA	Required	4
	LA 3653 Planting Design Fundamentals in Landscape Architecture	BLA	Required	
	LA 4514 Ecological Planting Design	BLA	Required	
	LA 4753 Sustainable Landscape Management	BLA	Optional	
	LA 4853 Sustainable Communities	BLA	Required	
Construction Materials and methods	LA 2544 Landscape Architecture Construction I	BLA	Required	4
	LA 2644 Landscape Architecture Construction II	BLA	Required	
	LA 2644 Landscape Architecture Construction III	BLA	Required	
	LA 4344 Landscape Architecture Construction IV	BLA	Optional	
	LA 4124 Landscape Architecture Construction V - Construction Documents	BLA	Optional	
	LA 4443 Exterior Design-Build Studio	BLA	Required	
Ecology	LA 1333 Landscape Systems and Plant Communities	BLA	Required	4
	LA 3653 Planting Design Fundamentals in Landscape Architecture	BLA	Required	
	LA 4514 Ecological Planting Design	BLA	Required	
	LA 4753 Sustainable Landscape Management	BLA	Optional	
	LA 4853 Sustainable Communities	BLA	Required	
Engineering	LA 2544 Landscape Architecture Construction I	BLA	Required	4
	LA 2644 Landscape Architecture Construction II	BLA	Required	
	LA 2644 Landscape Architecture Construction III	BLA	Required	
	LA 4344 Landscape Architecture Construction IV	BLA	Optional	
	LA 4124 Landscape Architecture Construction V - Construction Documents	BLA	Optional	
	LA 4443 Exterior Design-Build Studio	BLA	Required	
	LA 4523 Applications for GIS in Landscape Architects	BLA	Optional	
Geology	GG 1111 Earth Science I Lab	BLA	Required	2
	GG 1113 Survey of Earth Sciences I	BLA	Required	
	GG 1121 Earth Science II Lab	BLA	Optional	
	GG 1123 Survey of Earth Sciences II	BLA	Optional	
Hydrology	LA 4753 Sustainable Landscape Management	BLA	Optional	3
	LA 2644 Landscape Architecture Construction II	BLA	Required	
	LA 2644 Landscape Architecture Construction III	BLA	Required	
	LA 4344 Landscape Architecture Construction IV	BLA	Optional	
	LA 4124 Landscape Architecture Construction V - Construction Documents	BLA	Optional	
	LA 4443 Exterior Design-Build Studio	BLA	Required	
Mathematics	MA 1313 College Algebra	BLA	Required	2
	MA 1323 Trigonometry	BLA	Required	
	MA 1613 Calculus I	BLA	Optional	
	MA 2113 Introduction to Statistics	BLA	Optional	
	LA 4753 Sustainable Landscape Management	BLA	Optional	
Stormwater management/drainage	LA 2644 Landscape Architecture Construction II	BLA	Required	2
	LA 2644 Landscape Architecture Construction III	BLA	Required	
	LA 4753 Sustainable Landscape Management	BLA	Optional	
Sustainability Studies	LA 4853 Sustainable Communities	BLA	Required	8
	LA 2554 Landscape Architecture Design Studio I	BLA	Required	
	LA 2654 Landscape Architecture Design Studio II	BLA	Required	
	LA 3454 Landscape Architecture Design Studio III - Small Town/Rural	BLA	Required	
	LA 3623 Urban Planning Theory	BLA	Required	
	LA 3454 Landscape Architecture Design Studio IV - Urban Design	BLA	Required	
	LA 4523 Applications for GIS in Landscape Architects	BLA	Optional	
	LA 3454 Landscape Architecture Design Studio V - Regional	BLA	Required	
	LA 3454 Landscape Architecture Capstone Studio	BLA	Required	
	LA 2644 Landscape Architecture Construction II	BLA	Required	
Vehicular and pedestrian circulation/roadway alignment design	LA 2644 Landscape Architecture Construction II	BLA	Required	1

University/Program Reviewed: Mississippi State MLA

Required/optional courses that cover any of the following topics:	Course name(s)	Degree level(s)	Required or Optional?	Number of courses in topic required through all years of program
Botany/Horticulture	LA 1333 Landscape Systems and Plant Communities	MLA	Required	2
	LA 3653 Planting Design Fundamentals in Landscape Architecture	MLA	Required	
	LA 6463 Community Food Systems	MLA	Optional	
	LA 6514 Ecological Planting Design	MLA	Optional	
	LA 6753 Sustainable Landscape Management	MLA	Optional	
	LA 6853 Sustainable Communities	MLA	Optional	
Construction Materials and methods	LA 2544 Landscape Architecture Construction I - Materials	MLA	Required	2
	LA 2644 Landscape Architecture Construction II - Grading	MLA	Required	
	LA 2644 Landscape Architecture Construction III - Hydrology	MLA	Optional	
	LA 4344 Landscape Architecture Construction IV	MLA	Optional	
	LA 4124 Landscape Architecture Construction V - Construction Documents	MLA	Optional	
	LA 4443 Exterior Design-Build Studio	MLA	Optional	
Ecology	LA 1333 Landscape Systems and Plant Communities	MLA	Required	2
	LA 3653 Planting Design Fundamentals in Landscape Architecture	MLA	Required	
	LA 6463 Community Food Systems	MLA	Optional	
	LA 6514 Ecological Planting Design	MLA	Optional	
	LA 6753 Sustainable Landscape Management	MLA	Optional	
	LA 6853 Sustainable Communities	MLA	Optional	
Engineering	LA 2544 Landscape Architecture Construction I - Materials	MLA	Required	2
	LA 2644 Landscape Architecture Construction II - Grading	MLA	Required	
	LA 2644 Landscape Architecture Construction III - Hydrology	MLA	Optional	
	LA 4344 Landscape Architecture Construction IV	MLA	Optional	
	LA 4124 Landscape Architecture Construction V - Construction Documents	MLA	Optional	
	LA 4443 Exterior Design-Build Studio	MLA	Optional	
Geology				0
Hydrology	LA 6753 Sustainable Landscape Management	MLA	Optional	3
	LA 2644 Landscape Architecture Construction II - Grading	MLA	Required	
	LA 2644 Landscape Architecture Construction III - Hydrology	MLA	Optional	
	LA 4344 Landscape Architecture Construction IV	MLA	Optional	
	LA 4124 Landscape Architecture Construction V - Construction Documents	MLA	Optional	
	LA 4443 Exterior Design-Build Studio	MLA	Optional	
	LA 8513 Landscape Architecture Graduate Studio I	MLA	Required	
	LA 8522 Landscape Architecture Graduate Studio II	MLA	Required	
Mathematics	SO 8274 Graduate Social Statistics I	MLA	Optional	1
	ST 8114 Statistical Methods	MLA	Optional	
	LA 6463 Community Food Systems	MLA	Optional	
	LA 1223 Computers in Landscape Architecture	MLA	Required	
	LA 4523 Applications for GIS in Landscape Architects	MLA	Optional	
Stormwater management/drainage	LA 6753 Sustainable Landscape Management	MLA	Optional	3
	LA 2644 Landscape Architecture Construction II - Grading	MLA	Required	
	LA 2644 Landscape Architecture Construction III - Hydrology	MLA	Optional	
	LA 8513 Landscape Architecture Graduate Studio I	MLA	Required	
	LA 8522 Landscape Architecture Graduate Studio II	MLA	Required	
Sustainability Studies	LA 2554 Landscape Architecture Design Studio I	MLA	Required	16
	LA 2654 Landscape Architecture Design Studio II	MLA	Required	
	LA 4523 Applications for GIS in Landscape Architects	MLA	Required	
	LA 8512 Landscape Architecture Graduate Studio I	MLA	Required	
	LA 8513 Landscape Architecture Graduate Studio I	MLA	Required	
	LA 8522 Landscape Architecture Graduate Studio II	MLA	Required	
	LA 8523 Landscape Architecture Graduate Studio II	MLA	Required	
	LA 8532 Landscape Architecture Graduate Studio III	MLA	Required	
	LA 8533 Landscape Architecture Graduate Studio III	MLA	Required	
	LA 8545 Landscape Architecture Graduate Studio IV - Case Study	MLA	Required	
	LA 8613 Research Methods in Landscape Architecture	MLA	Required	
	LA 8711 Seminar in Watershed Planning and Management	MLA	Required	
	LA 8721 Seminar in Landscape Management	MLA	Required	

	LA 8731 Seminar in Community Based Planning	MLA	Required	
	LA 8741 Proposal Writing Seminar	MLA	Required	
	LA 8751 Seminar in Contemporary Issues	MLA	Required	
	LA 6753 Sustainable Landscape Management	MLA	Optional	
	LA 6853 Sustainable Communities	MLA	Optional	
Vehicular and pedestrian circulation/roadway alignment design	LA 2644 Landscape Architecture Construction II - Grading	MLA	Required	1

University/Program Reviewed: Penn State

Required/optional courses that cover any of the following topics:	Course name(s)	Degree level(s)	Required or Optional?	Number of courses in topic required through all years of program (BLA)	Number of courses in topic required through all years of program (MLA)
Botany/Horticulture	(See ecology courses)			4	4
Construction Materials and methods	LArch 236 Materials; LArch 335 Planting Methods	BLA, MLA	Required	2	2
Ecology	LArch 145 - Ecol & Plants I; LArch 245 Ecol & Plants II; LArch 246 Ridge & Valley Field Trip; LArch 216 Natural & Cultural Systems studio	BLA, MLA	Required	4	4
Engineering	LArch 245 Grading	BLA, MLA	Required	1	1
Geology	Soils 101	BLA	Required	1	
Hydrology	(see stormwater course)			1	1
Mathematics	2 gen eds (variable courses)	BLA	Required	2	
Stormwater management/drainage	LArch 336 Stormwater	BLA, MLA	Required	1	1
Sustainability Studies	2 required natural sciences gen eds (beyond soils)	BLA	Required	2	
Vehicular and pedestrian circulation/roadway alignment design	LArch 215 Design III: Site Design; LArch 315 Design V: Expanded Use, Scale, and Context; LArch 414 (3 required upper level studios with varied topics)	BLA, MLA	Required	5	5

University/Program Reviewed: Rhode Island School of Design, Department of Landscape Architecture, MLA

Required/optional courses that cover any of the following topics:	Course name(s)	Degree level(s)	Required or Optional?	Number of courses in topic required through all years of program
Botany/Horticulture	LDAR 2252 Plants Botany + Ecology	ML	Required	2
	LDAR-2253 Plants Form + Space	MLA	Required	
Construction Materials and methods	LDAR 2251 Material Logic Wood Metal + Stone	MLA	Required	5
	LDAR-2266 Material Tests Prototyping + Digi Fab	MLA	Required	
	LDAR 2254 Material Assemblies Detailing + Construction	MLA	Required	
	LDAR 231G Topics In Representation	MLA	Required	
	LDAR 232G Topics in Representation 2	MLA	Required	
Ecology	LDAR 2256 Design Foundations + Field Ecology	MLA	Required	3
	LDAR 2203 Site Ecology + Design	MLA	Required	
	LDAR 2201 Design Principles	MLA	Required	
Engineering	LDAR W207 Constructed Ground Terrain + Earthwork	MLA	Required	2
	LDAR 2204 Constructed Landscapes	MLA	Required	
Sustainability Studies	LDAR 226G Landscape Research Theory + Design	MLA	Required	2
	LDAR WW217 Research Methods	MLA	Required	
Hydrology / Stormwater management/drainage	LDAR 2257 Hydrological Systems	MLA	Required	1

University/Program Reviewed: Texas A&M BLA

Required/optional courses that cover any of the following topics:	Course name(s)	Degree level(s)	Required or Optional?	Number of courses in topic required through all years of program
Botany/Horticulture	HORT 306 Trees & Shrubs for Sustainable Built Environments	BLA	Required	5
	HORT 308 Plants for Sustainable Landscapes	BLA	Required	
	LAND 211 Landscape Design I	BLA	Required	
	LAND 212 Landscape Design II	BLA	Required	
	LAND 231 Landscape Construction I	BLA	Required	
Construction Materials and methods	LAND 301 Landscape Architecture Theory	BLA	Required	8
	LAND 484 Summer Internship	BLA	Required	
	LAND 494 Internship	BLA	Required	
	LAND 312 Landscape Design IV	BLA	Required	
	LAND 412 Landscape Design VI	BLA	Required	
	LAND 210 Microclimatic Urban Design: Cool Solutions for Hot Cities	BLA	Optional	
	LAND 231 Landscape Construction I	BLA	Required	
	LAND 232 Landscape Construction II	BLA	Required	
	LAND 331 Landscape Construction III	BLA	Required	
Ecology	RENr 205 Fundamentals of Ecology	BLA	Required	8
	RENr 215 Fundamentals of Ecology --Lab 1	BLA	Required	
	LAND 240 History of Landscape Architecture	BLA	Required	
	LAND 241 History and Development of Landscape Architecture in North America	BLA	Required	
	LAND 311 Landscape Design III	BLA	Required	
	LAND 312 Landscape Design IV	BLA	Required	
	LAND 210 Microclimatic Urban Design: Cool Solutions for Hot Cities	BLA	Optional	
	LAND 231 Landscape Construction I	BLA	Required	
	LAND 232 Landscape Construction II	BLA	Required	
Engineering	URPN 325 Introduction to GIS in Urban and Regional Planning]	BLA	Optional	2
	LAND 232 Landscape Construction II	BLA	Required	
Geology	LAND 331 Landscape Construction III	BLA	Required	3
	LAND 211 Landscape Design I	BLA	Required	
	LAND 212 Landscape Design II	BLA	Required	
Hydrology	LAND 312 Landscape Design IV	BLA	Required	6
	LAND 412 Landscape Design VI	BLA	Required	
	LAND 210 Microclimatic Urban Design: Cool Solutions for Hot Cities	BLA	Optional	
	LAND 231 Landscape Construction I	BLA	Required	
	LAND 232 Landscape Construction II	BLA	Required	
	LAND 331 Landscape Construction III	BLA	Required	
Mathematics	MATH 140 Math for Business & Social Science	BLA	Required	2
	MATH 142 Business Calculus	BLA	Required	
Stormwater management/drainage	LAND 311 Landscape Design III	BLA	Required	6
	LAND 312 Landscape Design IV	BLA	Required	
	LAND 412 Landscape Design VI	BLA	Required	
	LAND 210 Microclimatic Urban Design: Cool Solutions for Hot Cities	BLA	Optional	
	LAND 231 Landscape Construction I	BLA	Required	
	LAND 232 Landscape Construction II	BLA	Required	
Sustainability Studies	LAND 331 Landscape Construction III	BLA	Required	15
	LAND 101 Introduction to Landscape Architectural Practice	BLA	Required	
	LAND 240 History of Landscape Architecture	BLA	Required	
	LAND 241 History and Development of Landscape Architecture in North America	BLA	Required	
	LAND 431 Professional Practice	BLA	Required	
	LAND 111 Landscape Architecture Communications I	BLA	Required	
	LAND 112 Landscape Architectural Communications II	BLA	Required	
	LAND 211 Landscape Design I	BLA	Required	
	LAND 212 Landscape Design II	BLA	Required	
	LAND 311 Landscape Design III	BLA	Required	
	LAND 312 Landscape Design IV	BLA	Required	
	LAND 412 Landscape Design VI	BLA	Required	

Vehicular and pedestrian circulation/roadway alignment design	LAND 210 Microclimatic Urban Design: Cool Solutions for Hot Cities	BLA	Optional	5
	LAND 231 Landscape Construction I	BLA	Required	
	LAND 232 Landscape Construction II	BLA	Required	
	URPN 220 Digital Communication I	BLA	Required	
	URPN 320 Digital Communication II	BLA	Required	
	URPN 325 Introduction to GIS in Urban and Regional Planning]	BLA	Optional	
	LAND 312 Landscape Design IV	BLA	Required	
	LAND 412 Landscape Design VI	BLA	Required	
	LAND 231 Landscape Construction I	BLA	Required	
	LAND 232 Landscape Construction II	BLA	Required	
	LAND 331 Landscape Construction III	BLA	Required	

University/Program Reviewed: Texas A&M University MLA

Required/optional courses that cover any of the following topics:	Course name(s)	Degree level(s)	Required or Optional?	Number of courses in topic required through all years of program
Botany/Horticulture	LAND 614 Landscape Architectural Construction.	MLA	Required	3
	LAND 645 Practice Diversity in Landscape Architecture.	MLA	Required	
	HORT 608 Plants for Landscape Design	MLA	Required	
Construction Materials and methods	LAND 612 Landscape Architectural Site Engineering and Development	MLA	Required	4
	LAND 614 Landscape Architectural Construction.	MLA	Required	
	LAND 620 Open Space Development I.	MLA	Required	
Ecology	LAND 621 Open Space Development II	MLA	Required	8
	LAND 614 Landscape Architectural Construction.	MLA	Required	
	LAND 602 Landscape Architectural Design Theory and Application II	MLA	Required	
	LAND 620 Open Space Development I.	MLA	Required	
	LAND 621 Open Space Development II	MLA	Required	
	LAND 635/PLAN 635 Concepts in Ecological Planning and Design	MLA	Optional	
	LAND 693 Professional Study	MLA	Required	
	LAND 645 Practice Diversity in Landscape Architecture.	MLA	Required	
	ECCB 403 Population and Community Ecology	MLA	Required	
	HORT 608 Plants for Landscape Design	MLA	Required	
Engineering	LAND 612 Landscape Architectural Site Engineering and Development	MLA	Required	8
	LAND 614 Landscape Architectural Construction.	MLA	Required	
	LAND 602 Landscape Architectural Design Theory and Application II	MLA	Required	
	LAND 620 Open Space Development I.	MLA	Required	
	LAND 621 Open Space Development II	MLA	Required	
	LAND 640 Research Methods in Landscape Architecture.	MLA	Required	
	LAND 645 Practice Diversity in Landscape Architecture.	MLA	Required	
	LAND 646 Professional Practice.	MLA	Required	
	LAND 655 Landscape Architectural Communication.	MLA	Optional	
	PLAN 625 Geographical Information Systems in Landscape and Urban Planning.	MLA	Optional	
Geology	LAND 602 Landscape Architectural Design Theory and Application II	MLA	Required	2
	LAND 620 Open Space Development I.	MLA	Required	
Hydrology	LAND 612 Landscape Architectural Site Engineering and Development	MLA	Required	4
	LAND 614 Landscape Architectural Construction.	MLA	Required	
	LAND 602 Landscape Architectural Design Theory and Application II	MLA	Required	
	LAND 620 Open Space Development I.	MLA	Required	
Mathematics	LAND 612 Landscape Architectural Site Engineering and Development	MLA	Required	2
	LAND 614 Landscape Architectural Construction.	MLA	Required	
Stormwater management/drainage	LAND 612 Landscape Architectural Site Engineering and Development	MLA	Required	5
	LAND 614 Landscape Architectural Construction.	MLA	Required	
	LAND 602 Landscape Architectural Design Theory and Application II	MLA	Required	
	LAND 620 Open Space Development I.	MLA	Required	
	LAND 635/PLAN 635 Concepts in Ecological Planning and Design	MLA	Optional	
	LAND 645 Practice Diversity in Landscape Architecture.	MLA	Required	
Sustainability Studies	LAND 612 Landscape Architectural Site Engineering and Development	MLA	Required	10
	LAND 614 Landscape Architectural Construction.	MLA	Required	
	LAND 601 Landscape Architectural Design Theory.	MLA	Required	

	LAND 602 Landscape Architectural Design Theory and Application II	MLA	Required	
	LAND 620 Open Space Development I.	MLA	Required	
	LAND 621 Open Space Development II	MLA	Required	
	LAND 622/PLAN 622 Critical Place Studies: Theory, Research and Practice	MLA	Optional	
	LAND 632 Design for Active Living	MLA	Optional	
	LAND 635/PLAN 635 Concepts in Ecological Planning and Design	MLA	Optional	
	LAND 693 Professional Study	MLA	Required	
	LAND 603 Principles and Techniques of Land Development.	MLA	Optional	
	LAND 630 Development of Landscape Architecture	MLA	Required	
	LAND 640 Research Methods in Landscape Architecture.	MLA	Required	
	LAND 645 Practice Diversity in Landscape Architecture.	MLA	Required	
	LAND 655 Landscape Architectural Communication.	MLA	Optional	
	LAND 661 Visual Quality for Design and Planning.	MLA	Optional	
	LDEV 671 Sustainable Development	MLA	Optional	
	PLAN 625 Geographical Information Systems in Landscape and Urban Planning.	MLA	Optional	
Vehicular and Pedestrian Circulation/Roadway Alignment & Design	LAND 612 Landscape Architectural Site Engineering and Development	MLA	Required	6
	LAND 614 Landscape Architectural Construction.	MLA	Required	
	LAND 601 Landscape Architectural Design Theory.	MLA	Required	
	LAND 602 Landscape Architectural Design Theory and Application II	MLA	Required	
	LAND 620 Open Space Development I.	MLA	Required	
	LAND 621 Open Space Development II	MLA	Required	
	LAND 632 Design for Active Living	MLA	Optional	

University/Program Reviewed: University of New Mexico

Required/optional courses that cover any of the following topics:	Course name(s)	Degree level(s)	Required or Optional?	Number of courses in topic required through all years of program
Botany/Horticulture	Plants I + Plants II, Studios (5)	MLA	Required	7
Construction Materials and methods	Construction Materials + Methods, Studios (5)	MLA	Required	6
Ecology	Urban Ecology, Studio 502, Studio 503, Studio 504 Site + Environment	MLA	Required	5
Engineering	Grading + Drainage, History of LA, Studios	MLA	Required	5
Geology	Site + Environment, Design Studios 502, 504	MLA	Required	3
Hydrology	Grading + Drainage, Site + Environment, Studio 502	MLA	Required	3
Mathematics	Grading + Drainage, Site + Environment, Studios 502 503 504 505	MLA	Required	6
Stormwater management/drainage	Site + Environment, Design Studios 502, 504	MLA	Required	3
Sustainability Studies	Urban Ecology, Studios (5), Site + Environment, Theory	MLA	Required	7
Vehicular and pedestrian circulation/roadway alignment design	Site + Environment, Design Studios 502, 504	MLA	Required	3

University/Program Reviewed: University of Pennsylvania MLA

Required/optional courses that cover any of the following topics:	Course name(s)	Degree level(s)	Required or Optional?	Number of courses in topic required through all years of program
Botany/Horticulture	LARP 511 Workshop I: Ecology & Built Landscapes	MLA	Required	2
	LARP 512 Workshop II: Landform and Grading & Planting Design	MLA	Required	
	LARP 750 Topics in Construction, Horticulture, & Planting Design	MLA	Optional	
	LARP 755 Understanding Plants	MLA	Optional	
Construction Materials and methods	LARP 612 Workshop IV: Advanced Landscape Construction	MLA	Required	1
	LARP 750 Topics in Construction, Horticulture, & Planting Design	MLA	Optional	
Ecology	LARP 511 Workshop I: Ecology & Built Landscapes	MLA	Required	3
	LARP 512 Workshop II: Landform and Grading & Planting Design	MLA	Required	
	LARP 512 Workshop II: Spring Field Ecology	MLA	Required	
	LARP 761 Urban Ecology	MLA	Required	
	LARP 750 Topics in Construction, Horticulture, & Planting Design	MLA	Optional	
	LARP 760 Topics in Ecological Design	MLA	Optional	
	LARP 790/794 Natural Systems (for 3yr & 2yr students, respectively)	MLA	Required	

Engineering	LARP 611 Workshop III: Site Engineering & Water Management	MLA	Required	1
Geology	LARP 511 Workshop I: Ecology & Built Landscapes	MLA	Required	1
	LARP 512 Workshop II: Landform and Grading & Planting Design	MLA	Required	
Hydrology	LARP 511 Workshop I: Ecology & Built Landscapes	MLA	Required	1
Mathematics				
Stormwater management/drainage	LARP 611 Workshop III: Site Engineering & Water Management	MLA	Required	1
Sustainability Studies	LARP 760 Topics in Ecological Design	MLA	Optional	
Vehicular and pedestrian circulation/roadway alignment design				

University/Program Reviewed: UW-Madison BLA

Required/optional courses that cover any of the following topics:	Course name(s)	Degree level(s)	Required or Optional?	Number of courses in topic required through all years of program
Botany/Horticulture	Botany 130: Introduction to Botany (with lab)	BLA	Required	2
Construction Materials and methods	LA 354: Landscape Technology II	BLA	Required	1
Ecology	Bot 260: Introduction to Optional ecology	BLA	Required	2
	LA 361: Wetlands Optional ecology	MLA/BLA	Optional	
	LA 560: Plants and Optional ecology in Design	BLA	Required	
	LA 651: Plant Community Restoration Workshop	MLA/BLA	Optional	
	LA 668: Restoration Optional ecology	MLA/BLA	Optional	
Engineering	Mech Optionalng 160: Architectural Graphics;	BLA	Optional	
	Bio Systems Optionalng 201: Land Surveying Fundaments	BLA	Optional	
Geology	Geog 127: Physical Systems of the Optionalnvironment	BLA	Optional	1
Hydrology				
Mathematics	Gen Optional	BLA	Required	1
Stormwater management/drainage	LA 353: Landscape Technology I	BLA	Required	1
Sustainability Studies	LA 563: Designing Sustainable and Resilient Regions	BLA	Required	1
Vehicular and pedestrian circulation/roadway alignment design				

University/Program Reviewed: Utah State University

Required/optional courses that cover any of the following topics:	Course name(s)	Degree level(s)	Required or Optional?	Number of courses in topic required through all years of program (BLA)	Number of courses in topic required through all years of program (MLA)
Botany/Horticulture	PSC 2620 Woody Plants	BLA	Required	2	0
	LAEP 3500 Planting Design	BLA	Required		
Construction Materials and methods	LAEP 2600 Landscape Construction	BLA, MLA	Required	3	1
	LAEP 4110 Landscape Construction II	BLA	Required		
	LAEP 3600 Landscape Materials	BLA	Required		
Ecology	WILD 2200 Ecology	BLA	Required	1	1
	LAEP 6110 Landscape Ecology	MLA	Required		
Engineering				0	0
Geology	Physical Sciences	BLA	Required	1	0
Hydrology				0	0
Mathematics	Math 1050	BLA	Required	1	0
Stormwater management/drainage	LAEP 2600 Landscape Construction	BLA, MLA	Required	1	1
Sustainability Studies				0	0
Vehicular and pedestrian circulation/roadway alignment design	LAEP 2720 Analysis & Design II	BLA, MLA	Required	1	1