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University Transportation Center for Mobility

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Developing an Interdisciplinary Certificate Program in Transportation Planning

Final Report

Forster Ndubisi and Eric Dumbaugh

Performing Organization

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16. Abstract This project develops and implements a graduate certificate in transportation planning. Texas A&M University (A&M) currently offers instruction in transportation through its Master of Urban Planning (MUP) and Civil Engineering (CE) programs; however, there is a need for specialized instruction tailored to meeting the emerging needs of the transportation industry. The Certificate in Transportation Planning program fills this need by providing students with a substantive base of knowledge needed to be broadly successful in the transportation profession, as well as with specialized instruction tailored to building student skills and capabilities in three critical areas: transportation systems planning, transportation and urban design, and transportation policy. The certificate is being developed by the Department of Landscape Architecture and Urban Planning (LAUP) in the College of Architecture in partnership with the Texas Transportation Institute (TTI), the Zachry Department of Civil Engineering, and the Bush School of Government and Public Service. The certificate program serves as a vehicle to forge lasting partnerships between the participating departments and programs. This program is open to any graduate student at A&M with an interest in transportation.					
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Developing an Interdisciplinary Certificate Program in Transportation Planning

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- Dennis Perkinson, Ph.D., of the Texas Transportation Institute;
- David V. Rosowsky, Ph.D., P.E., formerly of the Department of Civil Engineering (now dean of the College of Engineering at Rensselaer Polytechnic Institute in Troy, New York);
- Gene Hawkins, Ph.D., of the Department of Civil Engineering; and
- Jeryl K. Mumpower, Ph.D., of the George Bush School of Government and Public Service.

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EXECUTIVE SUMMARY

While the need for an interdisciplinary approach to transportation is widely recognized by the professional community, few, if any, educational programs address the field of transportation in a truly comprehensive, interdisciplinary manner. The absence of such programs creates a unique opportunity for Texas A&M University to enhance its position as a national leader in the education of transportation professionals. The Certificate in Transportation Planning program seeks to fill this critical need by providing students with a multifaceted, interdisciplinary education in the field of transportation.

A proposal for an interdisciplinary Certificate in Transportation Planning was developed and approved for implementation. The proposal was developed by the primary investigators (PIs) in the Department of Landscape Architecture and Urban Planning (LAUP) in the College of Architecture, in partnership with the Texas Transportation Institute (TTI), the Zachry Department of Civil Engineering, and the Bush School of Government and Public Service. The proposal has five components:

- curriculum ,
- new course development and implementation,
- approval processes,
- administration, and
- marketing and recruitment.

The certificate's curriculum, which includes 15 credit hours, provides students with both a substantive background on the practice of transportation planning, as well as more specialized instruction in one of three interdisciplinary areas of focus:

- multimodal systems planning,
- transportation and urban design, and
- transportation policy.

Students enrolled in the certificate program will further take a comprehensive capstone course. The certificate program was designed to enable students enrolled in any graduate program at Texas A&M to receive the certificate in conjunction with their graduate degree.

Two new core courses in the certificate program were developed and delivered successfully in the spring 2008 semester. These are Transportation Investment Decisions and Applied Transportation Studio. Both courses now have permanent course numbers. The certificate was approved in two phases. The first phase was approval by the College of Architecture Executive Committee on October 16, 2007, which enabled the certificate to be offered as a College of Architecture certificate. The second phase was approval as a university-wide certificate by the Texas A&M Faculty Senate on July 29, 2008, with final approval by then-President Elsa Murano on August 6, 2008.

Dr. Eric Dumbaugh was appointed as the certificate coordinator once the certificate was approved by the College of Architecture Executive Committee. Administrative processes were established in spring 2008 to process student admissions and guide students through the program. Plans are underway to establish a Certificate Council comprised of faculty from the participating units to provide advisory input into the administration of the certificate program.

The project approach was to delineate six primary activities essential in successfully developing and implementing an interdisciplinary graduate certificate in transportation as well as establishing timelines and benchmarks for implementing them. These activities are:

- initiate the certificate approval process;
- administer the certificate program;
- recruit, advise, and mentor students to graduation;
- develop marketing materials and engage in major recruitment efforts;
- develop and deliver new courses; and
- implement program institutionalization and growth.

To date, 30 students have enrolled in the program, 18 of which have received the certificate.

PROJECT SIGNIFICANCE

Few educational programs address the field of transportation in a truly comprehensive, interdisciplinary manner. Yet, the issues and problems that confront transportation professionals require increasingly multidisciplinary and interdisciplinary approaches to address them effectively. Students with an interest in transportation typically pursue degrees in either urban planning or civil engineering. Yet increasingly, the transportation profession needs practitioners that can complement these traditional areas of expertise with a broader, interdisciplinary perspective of how economics, public policy, finance, and urban design influence the effectiveness of the transportation system.

While practicing transportation professionals are well aware of the need for an interdisciplinary approach to resolving transportation-related problems, few, if any, educational programs provide a curriculum that addresses transportation in an interdisciplinary manner. The absence of such programs creates a unique opportunity for Texas A&M University (A&M) to enhance its position as a national leader in the education of transportation professionals.

This project sought to develop and implement an interdisciplinary graduate certificate in transportation planning. This certificate is intended to fill this critical need by providing students with a substantive base of knowledge needed to be broadly successful in the transportation industry, as well as with specialized instruction in one of three interdisciplinary areas of focus:

- multimodal systems planning,
- transportation and urban design, and
- transportation policy.

Students enrolled in the certificate program will further take a comprehensive capstone course, requiring them to partner with students from other areas of specialization to develop a multifaceted, interdisciplinary approach to addressing a real-world transportation problem.

Students completing the Certificate in Transportation Planning program will thus graduate with both a comprehensive understanding of the role of transportation in a contemporary society and an interdisciplinary perspective on how to best address transportation-related problems. Students enrolled in the program will receive the Certificate in Transportation Planning in conjunction with their graduate degree. The certificate will result in the development of new, interdisciplinary courses in transportation. Consequently, the project will expand Texas A&M's transportation curriculum and enhance the university's position as a national leader in transportation education. Lastly, this certificate program provides the foundation for developing an executive certificate that will be accessible to professionals in selected urban locations in Texas as well as an interdisciplinary master's degree in transportation.

PROJECT OUTCOMES

The project outcomes are organized around three themes:

- certificate structure;
- project activities, timelines, and benchmarks; and
- detailed certificate proposal (presented in the appendix).

Certificate Structure

The Certificate in Transportation Planning involves a 15-credit sequence comprised of one required foundational course (3 credits), three focus-area courses (9 credits), and a capstone course (3 credits) providing a comprehensive overview and application of the skills and techniques learned during the completion of the certificate program. Figure 1 depicts the overall structure of the 15-credit certificate program.

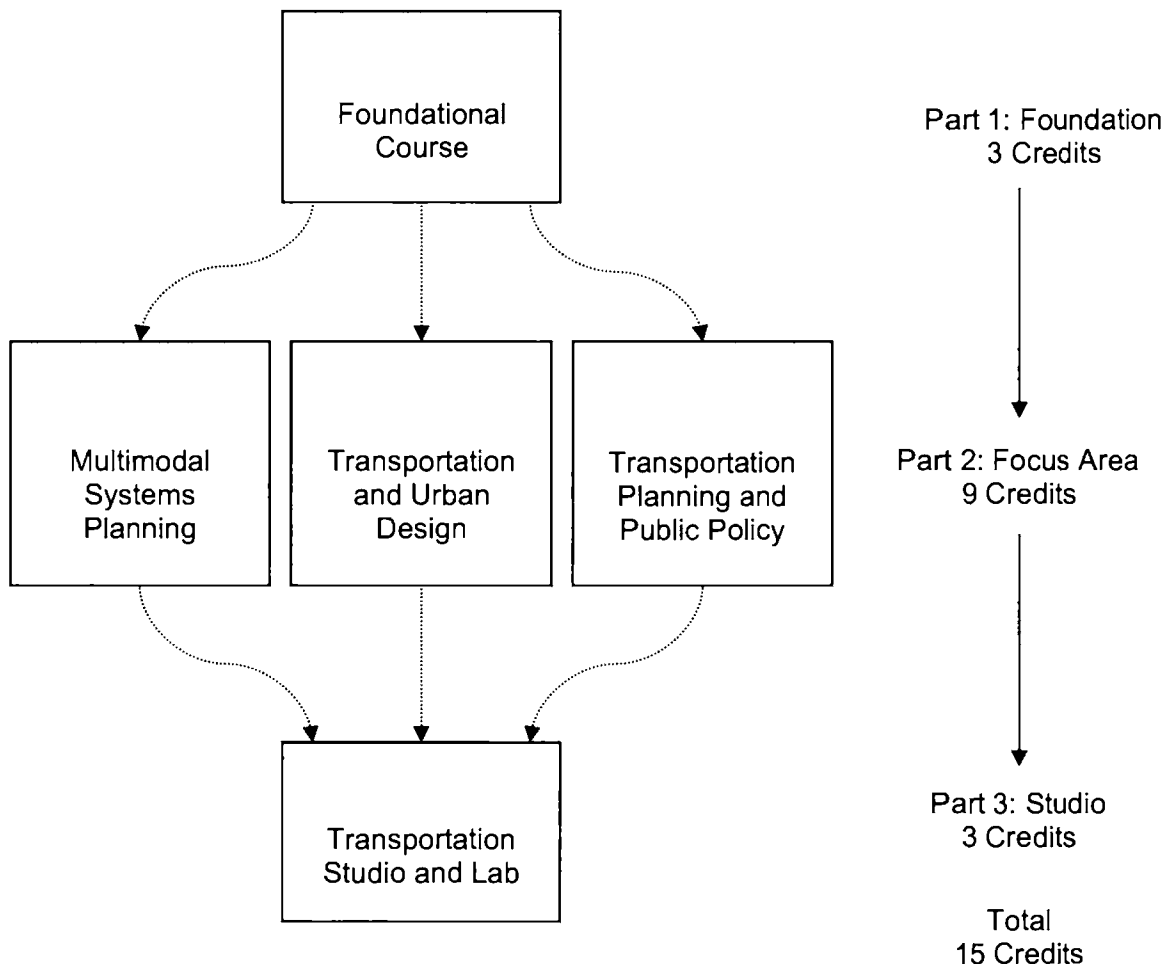


Figure 1. Certificate in Transportation Planning Curriculum Structure.

The program is comprised of the following components:

1. **Foundations of Transportation Practice (3 credit hours).** Students pursuing the certificate begin their study by taking PLAN 612: Transportation in City Planning, which provides a comprehensive overview of the role of transportation in society.

Required (3 credits):

- PLAN 612: Transportation in City Planning

2. **Focus Area (9 credit hours).** The second step in the completion of the certificate is the completion of 9 credits in one of three specific areas of professional focus. Each of the three focus areas is designed to meet critical needs within the transportation profession, and is tailored toward securing student placement in appropriate transportation-related agencies and organizations:

- **Multimodal Systems Planning.** The focus area in multimodal systems planning is intended for students seeking to address regional-level transportation issues. This focus area builds upon the foundational curriculum by providing an in-depth examination of multimodal solutions for addressing regional mobility, as well as providing students with instruction on the tools and methods used for designing and aligning regional-level transportation system investments. Students focusing on multimodal systems planning will have the educational background needed for successful employment in metropolitan planning organizations (MPOs), regional councils of governments (COGs), and the diverse array of private consulting firms that provide support for the activities of these agencies. The following are courses for students focusing on multimodal systems planning.

Required: Focused Foundation in Multimodal Systems Planning (3 credits):

- PLAN 670: Urban Public Transportation Planning

Electives: Multimodal Systems Planning (6 credits):

- PLAN 650: Disaster Response Planning
- PLAN 674: Transportation Systems Analysis
- PLAN 673: Design for Sustainable Transportation
- CVEN 672: Engineering and Urban Transportation Systems
- CVEN 618: Traffic Engineering: Operations
- PLAN 626: Advanced GIS in Landscape Architecture and Urban Planning*
- PLAN 669: Urban Infrastructure Planning
- PLAN 689: Transportation Investment Decisions
- PLAN 689: Transportation and Urban Design
- CVEN 632: Transportation Systems Engineering Management

* Prerequisite: PLAN 625: Geographic Information Systems in Landscape Architecture and Urban Planning or an approved substitute

- **Transportation and Urban Design.** The focus area in transportation and urban design seeks to address the growing demand for transportation professionals who can balance conventional mobility concerns with the needs of the built and natural environments. Despite the call from industry leaders such as the Federal Highway Administration (FHWA), the Institute of Transportation Engineers (ITE), and the Transportation Research Board (TRB) for a more “context-sensitive” approach to

transportation planning and design, few, if any, university programs provide specific instruction in this area. The focus area in transportation and urban design seeks to build upon Texas A&M's reputation as a leader in transportation education by providing specialized instruction aimed at addressing this critical professional need. Students focusing on transportation and urban design will typically find employment in the growing number of private firms providing specialized transportation design services to both local governments and state departments of transportation (DOTs), as well as in staff positions in public-sector agencies. The following are courses for students focusing on transportation and urban design.

Required: Focused Foundation in Transportation and Urban Design (3 credits):

- PLAN 673: Design for Sustainable Transportation

Electives: Transportation and Urban Design (6 credits):

- PLAN 674: Transportation Systems Analysis
- PLAN 670: Urban Public Transportation Planning
- PLAN 673: Sustainable Transportation
- LAND 661: Visual Quality for Design and Planning
- PLAN 689: Transportation Investment Decisions
- PLAN 669: Urban Infrastructure Planning
- CVEN 617: Traffic Engineering: Characteristics
- CVEN 632: Transportation Systems Engineering Management
- CVEN 635: Street and Highway Design
- CVEN 618: Traffic Engineering: Operations
- CVEN 672: Engineering and Urban Transportation Systems

- **Transportation Planning and Public Policy.** Public expenditures in transportation infrastructure total more than \$170 billion per year,¹ with many public funding programs tied to specific program grants that direct how transportation system investments are made. The transportation planning and public policy focus area is intended to develop policy innovators who are able to tailor public policy and finance to address emerging transportation needs. Students focusing on this area will have the educational background needed to assume policy and managerial positions in public-sector entities responsible for transportation planning and investments, such as state and local DOTs, as well as in the federal agencies tasked with oversight of the nation's transportation system, such as FHWA and the Federal Transit Administration (FTA), among others. The following are proposed courses for this focus area.

Required: Focused Foundation in Transportation Planning and Public Policy (3 credits):

- PLAN 676: Transportation Investment Decisions

Electives: Transportation Planning and Public Policy (6 credits):

- BUSH 611: Public Policy Formation
- BUSH 612: Public Policy Administration
- BUSH 614: Organization for the Public Sector
- BUSH 634: Public Management

¹ Bureau of Transportation Statistics (2005). *Transportation Statistics Annual Report*. Washington, D.C.: Bureau of Transportation Statistics, November.

- CVEN 632: Transportation Systems Engineering Management
- PLAN 669: Urban Infrastructure Planning
- PLAN 650: Disaster Response Planning

3. **Capstone Course (3 credit hours).** The Certificate in Transportation Planning culminates in a second-year capstone course that synthesizes the knowledge obtained during the course of the certificate program. As envisioned, the capstone course will require students from each of the three focus areas to work collaboratively to develop comprehensive real-world solutions to transportation problems at the local and regional scales. As growth and demand in individual focus areas permit, additional capstone courses may be added that are tailored to students in specific focus areas.

Required (3 credits):

- PLAN 678: Applied Transportation Studio

Project Activities, Timelines, and Benchmarks

Six key project activities were developed and implemented. Table 1 displays the key components of these activities, benchmarks, and delivery schedules. Forster Ndubisi (lead PI) provided overall project management and coordination for the development, certificate program approval, and implementation of the certificate program. Eric Dumbaugh (co-PI) served as the certificate program director. His responsibilities included day-to-day program administration, development of marketing and recruitment materials, student recruitment and advising, and program institutionalization and growth.

Table 1. Key Components of Project Activities, Timelines, and Benchmarks.

		2007	2008			2009			2010
		Fall	Spr	Sum	Fall	Spr	Sum	Fall	Spr
Task 1	Initiation of Certificate Approval Process								
Coll	lege Level	X							
Univers	ity Level			X					
	Texas A&M President			X					
Task 2	Certificate Program Administration								
	Appoint Certificate Coordinator	X							
	Establish Certificate Fellow Advisory Board					X			
	Establish Certificate Policies and Benchmarks		X	X	X				
	Develop Forms and Administrative Materials		X						
Task 3	Student Recruitment and Graduation								
Initiate	Preliminary Recruitment Efforts	X	X	X	X				
	Graduate First Cohort of Students		X						
	Graduate Second Cohort of Students (University-Wide)				X		X	X	
	Graduate Third Cohort of Students								X
Task 4	Marketing and Recruitment Materials								
	Develop Certificate Program Website			X					
	Develop Print Recruitment Materials			X		X			
	Develop Student Recruitment Program		X	X					
	Implement Recruitment Program			X	X	X	X	X	X
Task 5	Certificate Course Development and Implementation								
	PLAN 678: Transportation Certificate Capstone		X			X			X
	PLAN 676: Transportation Investment Decisions		X			X			X
	New Course: Transportation and Urban Design						X		
Task 6	Program Institutionalization and Growth								
	Conduct Ongoing Policy Meetings with Certificate Fellows					X		X	X
	Initiate the Development of an Executive Certificate Program in Transportation							X	X
	Initiate Transportation Symposium Program					X			
Initiate	Executive Certificate Approval Process							X	X

Highlights of project outcomes are as follows:

- The team initiated and completed the certificate approval process. This was accomplished in two phases: The certificate was approved by the College of Architecture on October 16, 2007 (first quarter of fiscal year 2008). It was subsequently approved as a university-wide certificate by the Texas A&M Faculty Senate on July 29, 2008, with a final approval by then-President Elsa Murano on August 6, 2008 (third quarter of fiscal year 2008).
- Dr. Eric Dumbaugh was appointed certificate program coordinator (first quarter of fiscal year 2008), and developed forms and administrative materials for student admission and advising (completed in the second quarter of 2008).
- Texas A&M established a Certificate Council (completed in the first quarter of fiscal year 2009) that provides advisory oversight for the certificate program.
- The team developed and delivered two new core graduate courses (second quarter of fiscal year 2008) and an undergraduate transportation course. They are PLAN 676: Transportation Investment Decisions, PLAN 678: Applied Transportation Studio, and URSC 369: Transportation and Urban Form. The graduate courses were delivered successfully by two TTI personnel, Dr. William Eisele and Dr. David Ellis. These courses have been offered for three consecutive years and now have permanent course numbers.
- The team recruited students successfully into the certificate program and developed a website for the certificate in the first quarter of fiscal year 2009.
- Texas A&M awarded a total of 19 \$1,000 scholarships and two \$2,500 fellowships, and employed two student technicians as a vehicle to recruit students into the certificate program.
- Texas A&M enrolled a total of 30 students in the certificate program; these students are in various stages of progress toward completing the certificate. One student graduated in May of 2008 with a college-wide certificate, and 16 students completed the requirements of the university-wide certificate as of August 2010.
- The team developed a plan for program institutionalization and growth; the first initiative is establishing a Transportation Symposium program. The first lecture in the symposium/lecture series was held in the spring of 2009 (first quarter of fiscal year 2009) and featured Dan Burden, president of Walkable Communities.

CONCLUSIONS

With the development and implementation of the interdisciplinary certificate program in transportation, Texas A&M has moved one step closer to becoming a national leader in the education of transportation professionals. This program has brought together many of the constituent academic and service programs across Texas A&M that address transportation-related issues and has linked their respective efforts into a comprehensive, interdisciplinary program in transportation. The team has implemented and executed the Certificate Advisory Council, comprised of representatives from the Department of Landscape Architecture, the Hazard Reduction and Recovery Center, the Texas Transportation Institute, the Department of Civil Engineering, and the Bush School of Government and Public Service to cement these relationships and direct the program over time.

As of this writing, 30 students from three different degree programs have enrolled in the certificate program, 17 of which have completed the certificate and entered the workforce. This program growth has led to hiring a second full-time faculty member to assist in teaching the courses and advising the program's students.

An opportunity exists in the future to develop an executive certificate program for practicing professionals across the state of Texas and beyond. We are currently in the process of developing the certificate program into an abbreviated, executive-level certificate program that can be offered at remote locations or through distance learning.

**APPENDIX: PROPOSAL FOR THE GRADUATE CERTIFICATE IN TRANSPORTATION
PLANNING**

2010

THE GRADUATE CERTIFICATE IN
TRANSPORTATION PLANNING



Texas A&M University

August 2010

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Part I: Program Description

Purpose

The Certificate in Transportation Planning (CTP) is a multidisciplinary program aimed at providing students with a substantive base of knowledge needed to be broadly successful in the transportation profession, as well as with specialized instruction tailored to building student skills and capabilities in three critical areas: multimodal systems planning, transportation and urban design, and transportation policy. This program will be open to any graduate student at Texas A&M University with an interest in transportation. The CTP program is developed as a partnership between the College of Architecture, the Department of Civil Engineering, the Texas Transportation Institute (TTI), and the Bush School of Government and Public Service. The CTP will be housed in the Hazard Reduction and Recovery Center in the College of Architecture.

The CTP Council

The CTP Council is comprised of at least five faculty members who are experts in the field, including representatives from the participating units – the Department of Landscape Architecture and Urban planning (LAUP), the Hazard Reduction and Recovery Center in the College of Architecture, the Zachry Department of Civil Engineering, the Texas Transportation Institute (TTI), and the George Bush School of Government and Public Service. These faculty members will be appointed by the dean of the College of Architecture to advise on all matters relating to the program.

The Graduate Advisory Committee for each student, with the oversight of degree coordinators, department heads, and the Office of Graduate Studies, is responsible for the academic program of the student. However, the CTP Council is charged with ensuring that students recommended for the certificate have met content standards.

The program can be accomplished within the minimum number of hours required for any of the graduate degrees offered within the College of Architecture. However, the fit with programs in other colleges will need to be assessed on a case-by-case basis. Moreover, the student's Graduate Advisory Committee might require, or the student may choose to take, additional hours not in the degree plan in order to meet the requirements for the certificate.

The Certificate Program

The certificate is to be awarded after completion of a prescribed program of study, and must be signed by the head of the student's academic department and the dean of the college. The certificate contains the seal of the university and appropriate text. It will normally be presented at college ceremonies prior to the official university graduation exercises.

Part II: Criteria and Course Requirements

The College of Architecture will award the certificate to students meeting the criteria listed below:

1. All students should declare intent to seek the certificate at the time of filing a Degree Plan but in any event must submit an application as soon as possible after filing a Degree Plan. Application forms are available in the Graduate Programs Office in the College of Architecture, and are also available at the Hazard Reduction and Recovery Center and from the certificate program coordinator.
2. The student must complete a minimum of 15 credit hours of course work in transportation planning. This 15-credit sequence of courses is comprised of a foundational course in transportation planning (Foundation: 3 credits), a course providing a foundation in the student's area of focus (Focused Foundation: 3 credits), two electives in the student's chosen area of focus (6 credits), and a studio and lab course that provides a comprehensive, multidisciplinary application of the skills and knowledge gained during the completion of the certification program (Capstone Course: 3 credits). The courses must be applicable toward a graduate degree in the College of Architecture but may not necessarily be included on the student's degree plan. At least, 3 credit hours of course work with transportation content must be from outside the student's major department.
3. The student must complete a professional study, thesis, or dissertation with a transportation focus approved by the CTP Council if this is required by the student's major program.
4. On completion of all the requirements for the graduate degree, the student will receive the certificate signed by the dean and the appropriate department head.

The student's Graduate Advisory Committee remains the primary body for recommending the degree plan content. Courses required or intended for the certificate may be used in the degree plan with the concurrence of the Graduate Advisory Committee. Students also may add courses beyond their normal degree requirements in order to fulfill the certificate requirements. Students are encouraged to consult with their Graduate Advisory Committee and the coordinator of the certificate as they develop their degree plans.

Part III-A: Approved Courses for the Certificate

The CTP Council will pre-approve a list of courses that meet the requirements for transportation planning content. The list, together with associated syllabi and names of instructors, will be on file in the Certificate in Transportation Planning program office, which is located in the LAUP office. The list will also be available in the Hazard Reduction and Recovery Center office.

Students who identify a course not on the list of pre-approved courses, or who wish to transfer courses from another institution, must submit a written statement that clearly describes how a

course lacking prior approval is related to the student’s course of study in transportation planning. This written statement, supported by a copy of the course syllabus, will be reviewed by the CTP Council. Where a course has a generic topic (e.g., a design studio in architecture or a capstone studio course in land development or planning), the written statement of the transportation planning content and the student’s specific role in working with that content must be cosigned by the course instructor. Courses that are not acceptable for use toward a graduate degree at Texas A&M University will not be approved under any circumstances. The CTP Council may seek input from faculty concerning course content and/or the specific contribution of a student in a course with team activity.

Where the CTP Council makes a negative finding as to applicability of a course or a final project, the finding will be made in writing with copies to the student, student file, and chair of the student’s Graduate Advisory Committee. Appeals against findings of the CTP Council will be made to the academic dean of the College of Architecture.

Part III-B: Curriculum

The curriculum for the certificate is represented graphically in Figure 1.

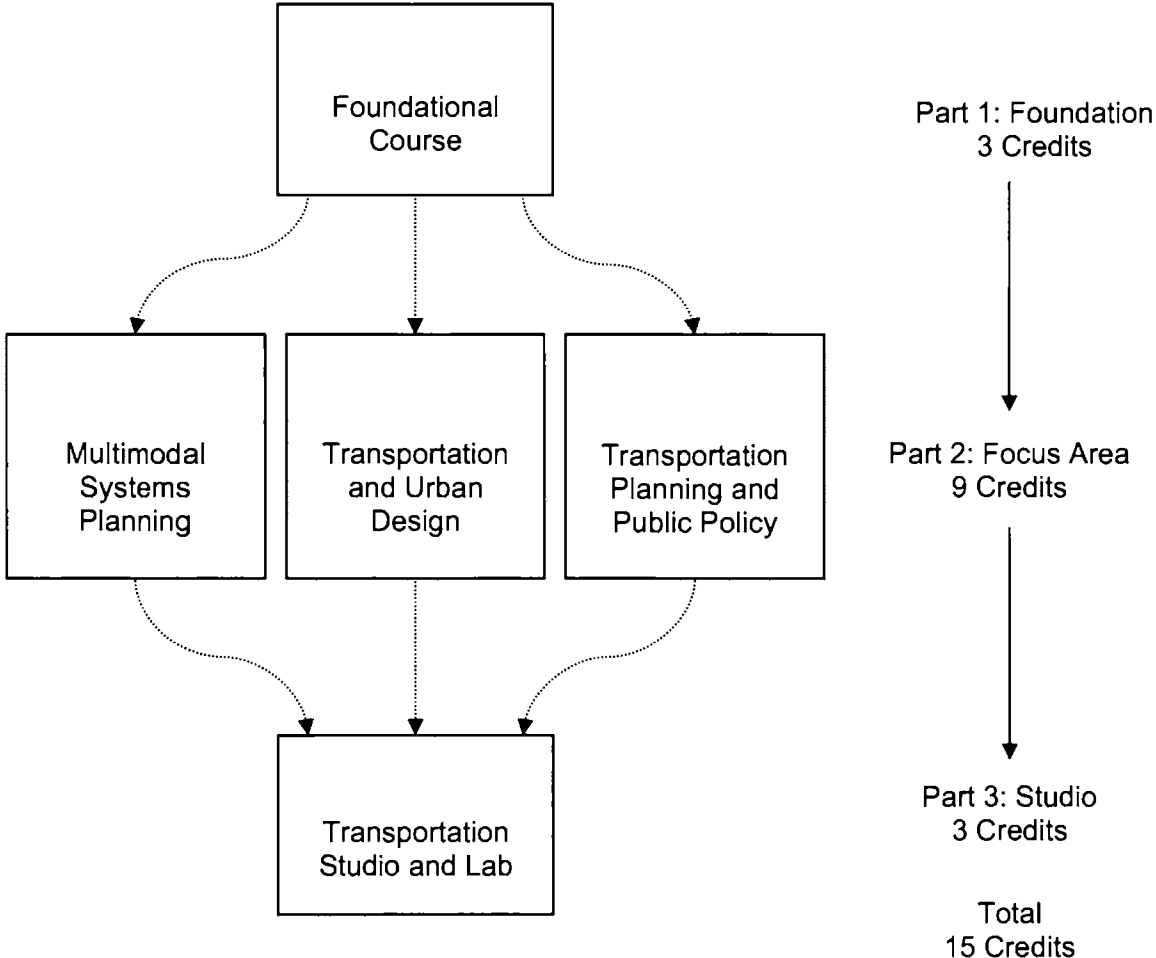


Figure 1. Certificate in Transportation Planning Curriculum Structure.

The program is comprised of the following components:

1. **Foundations of Transportation Practice (3 credit hours).** Students pursuing the certificate will begin their study by taking PLAN 612: Transportation in City Planning, which provides a comprehensive overview of the role of transportation in society.

Required (3 credits):

- PLAN 612: Transportation in City Planning

2. **Focus Area (9 credit hours).** The second step in the completion of the certificate is the completion of 9 credits in one of three specific areas of professional focus. Each of the three focus areas is designed to meet critical needs within the transportation profession, and is tailored toward securing students placement in appropriate transportation-related agencies and organizations.

- **Multimodal Systems Planning.** The focus area in multimodal systems planning is intended for students seeking to address regional-level transportation issues. This focus area builds upon the foundational curriculum by providing an in-depth examination of multimodal solutions for addressing regional mobility, as well as providing students with instruction on the tools and methods used for designing and aligning regional-level transportation system investments. Students focusing on multimodal systems planning will have the educational background needed for successful employment in metropolitan planning organizations (MPOs), regional councils of governments (COGs), and the diverse array of private consulting firms that provide support for the activities of these agencies. The following are courses for students focusing on multimodal systems planning.

Required: Focused Foundation in Multimodal Systems Planning (3 credits):

- PLAN 670: Urban Public Transportation Planning

Electives: Multimodal Systems Planning (6 credits):

- PLAN 650: Disaster Response Planning
- PLAN 674: Transportation Systems Analysis
- PLAN 673: Design for Sustainable Transportation
- CVEN 672: Engineering and Planning Urban Transportation Systems
- CVEN 618: Traffic Engineering: Operations
- PLAN 626: Advanced GIS in Landscape Architecture and Urban Planning*
- PLAN 676: Transportation Investment Decisions (new)

* Prerequisite: PLAN 625: Geographic Information Systems in Landscape Architecture and Urban Planning or an approved substitute

- **Transportation and Urban Design.** The focus area in transportation and urban design seeks to address the growing demand for transportation professionals who can balance conventional mobility concerns with the needs of the built and natural environments. Despite the call from industry leaders such as the Federal Highway Administration (FHWA), the Institute of Transportation Engineers (ITE), and the

Transportation Research Board (TRB) for a more “context-sensitive” approach to transportation planning and design, few, if any, university programs provide specific instruction in this area. The focus area in transportation and urban design seeks to build upon Texas A&M’s reputation as a leader in transportation education by providing specialized instruction aimed at addressing this critical professional need. Students focusing on transportation and urban design will typically find employment in the growing number of private firms providing specialized transportation design services to both local governments and state departments of transportation (DOTs), as well as in staff positions in public-sector agencies. The following are courses for students focusing on transportation and urban design.

Required: Focused Foundation in Transportation and Urban Design (3 credits):

- PLAN 673: Design for Sustainable Transportation

Electives: Transportation and Urban Design (6 credits):

- PLAN 674: Transportation Systems Analysis
- PLAN 670: Urban Public Transportation Planning
- LAND 661: Visual Quality for Design and Planning
- PLAN 676: Transportation Investment Decisions
- CVEN 617: Traffic Engineering – Characteristics
- CVEN 635: Street and Highway Design
- CVEN 618: Traffic Engineering: Operations
- CVEN 672: Engineering and Urban Transportation Systems

- **Transportation and Public Policy.** Public expenditures in transportation infrastructure total more than \$170 billion per year,² with many public funding programs tied to specific program grants that direct how transportation system investments are made. The transportation and public policy focus area is intended to develop policy innovators who are able to tailor public policy and finance to address emerging transportation needs. Students focusing on this area will have the educational background needed to assume policy and managerial positions in public-sector entities responsible for transportation planning and investments, such as state and local DOTs, as well as in the federal agencies tasked with oversight over the nation’s transportation system, such as FHWA and the Federal Transit Administration (FTA), among others. The following are proposed courses for this focus area.

Required: Focused Foundation in Transportation and Public Policy (3 credits):

- PLAN 676: Transportation Investment Decisions

Electives: Transportation and Public Policy (6 credits):

- PSAA 611: Public Policy Formation
- PSAA 616: Public Organization in a Pluralistic Society
- PSAA 617: State and Local Government Policy

² Bureau of Transportation Statistics (2005). *Transportation Statistics Annual Report*. Washington, D.C.: Bureau of Transportation Statistics, November.

- PSAA 622: Public Finance
 - PSAA 634: Public Management
 - PLAN 650: Disaster Response Planning
3. **Capstone Course (3 credit hours).** The Certificate in Transportation Planning will culminate in a second-year capstone course that synthesizes the knowledge obtained during the course of the certificate program. As envisioned, the capstone course will require students from each of the three focus areas to work collaboratively to develop comprehensive real-world solutions to transportation problems at the local and regional scales. As growth and demand in individual focus areas permit, additional capstone courses may be added that are tailored toward students in specific focus areas.

Required (3 credits):

- PLAN 678: Applied Transportation Studio

Part III-C: Program Faculty

The following faculty members have special expertise appropriate to transportation planning and should be considered for inclusion on guidance committees:

- Eric Dumbaugh – landscape architecture and urban planning,
- Bill Eisele of the Texas Transportation Institute – landscape architecture and urban planning,
- Chanam Lee – landscape architecture and urban planning,
- Ming Han Li – landscape architecture and urban planning,
- Michael Lindell – landscape architecture and urban planning,
- Tim Lomax of the Texas Transportation Institute – landscape architecture and urban planning,
- Forster Ndubisi – landscape architecture and urban planning,
- Dennis Perkinson of the Texas Transportation Institute – landscape architecture and urban planning,
- Katherine Turnbull of the Texas Transportation Institute – landscape architecture and urban planning,
- Douglas Wunneburger – landscape architecture and urban planning;
- Mark Burris – civil engineering,
- Luca Quadrifoglio – civil engineering,
- Eric Lindquist of the Bush School of Government and Public Service, and
- Arnold Vedlitz of the Bush School of Government and Public Service.

Part III-D: Model Degree Plan for Master of Urban Planning Students*

Fall Semester I	PLAN 601: Introduction to Urban Planning	1
	PLAN 604: Planning Methods I	3
	PLAN 610: Structure and Function of Settlements	3
	<i>PLAN 612: Transportation in City Planning</i>	<u>3</u>
		10
Spring Semester I	PLAN 613: Planning Methods II	3
	PLAN 640: Law and Legislation	3
	<i>PLAN 673: Design for Sustainable Transportation</i>	3
	<i>PLAN 674: Transportation Systems Analysis</i>	<u>3</u>
		12
Fall Semester II	PLAN 684: Professional Internship	1
	PLAN 662: Applied Planning I	3
	<i>PLAN 670: Urban Public Transportation Planning</i>	3
	Elective	3
	Elective	<u>3</u>
		13
Spring Semester II	PLAN 663: Applied Planning II	3
	PLAN 693: Professional Study	1
	<i>PLAN 678: Applied Transportation Studio</i>	3
	Elective	<u>3</u>
		10
Minimum Hours Standard Degree		45

CTP classes are in *italics*.

* Specific course sequences may vary given the focus area selected by the individual student. The above sequence represents the anticipated schedule for a student focusing on multimodal transportation systems planning.

Part III-E: Model Degree Plan for Master of Landscape Architecture Students*

Fall Semester I	LAND 620: Open Space Development I	5
	LAND 640: Research Methods in Landscape Architecture	3
	RLEM 602: Ecology and Land Uses	3
	<i>PLAN 612: Transportation in City Planning</i>	<u>3</u>
		14
Spring Semester I	LAND 621: Open Space Development II	5
	LAND 681: Seminar	1
	<i>PLAN 673: Design for Sustainable Transportation</i>	3
	<i>PLAN 674: Transportation Systems Analysis</i>	<u>3</u>
		12
Summer Semester I	LAND 684: Professional Internship	<u>4</u>
		4
Fall Semester II	LAND 646: Professional Practice	3
	LAND 693: Professional Study	3
	<i>PLAN 670: Urban Public Transportation</i>	3
	Elective	<u>3</u>
		12
Spring Semester II	LAND 646: Professional Practice	3
	LAND 693: Professional Study	4
	<i>PLAN 678: Applied Transportation Studio</i>	<u>3</u>
		10
Minimum Hours Standard Degree		52

CTP classes are in *italics*.

* Specific course sequences may vary given the focus area selected by the individual student. The above sequence represents the anticipated schedule for a student pursuing a Master of Landscape Architecture degree focused on transportation and urban design.

Part III-F: Model Degree Plan for Master of Architecture Students*

Fall Semester I	ARCH 605: Design I	6
	ARCH 631: Structure Elements III	3
	ARCH 633: Environmental Systems 3	3
		<u>12</u>
Spring Semester I	ARCH 606: Design II	6
	<i>PLAN 673: Design for Sustainable Transportation</i>	3
	ARCH 638/9: Architectural History	3
		<u>12</u>
Summer Semester I	Architecture Elective	3
		<u>3</u>
Fall Semester II	ARCH 607: Design III	6
	<i>PLAN 670: Urban Public Transportation</i>	3
	<i>PLAN 612: Transportation in City Planning</i>	3
	ARCH 685: Final Study Preparation	1
		<u>13</u>
Spring Semester II	ARCH: Professional Practice	3
	ARCH: 693: Professional Study	6
	<i>PLAN 678: Applied Transportation Studio</i>	3
		<u>12</u>
Minimum Hours Standard Degree		52

CTP classes are in *italics*.

* Specific course sequences may vary given the focus area selected by the individual student. The above sequence represents the anticipated schedule for a student pursuing a Master of Architecture degree focused on transportation and urban design.

Part III-G: Model Degree Plan for Master of Science in Civil Engineering Students*

Fall Semester I	CVEN 617: Traffic Engineering – Characteristics	3
	CVEN 681: Seminar in Transportation	1
	<i>CVEN 672: Engineering and Urban Transportation</i>	3
	<i>PLAN 612: Transportation in City Planning</i>	3
	Elective	<u>3</u>
		13
Spring Semester I	CVEN 632: Transportation System Management	3
	CVEN 618: Traffic Engineering – Operations	3
	<i>CVEN 635: Street and Highway Design</i>	3
	<i>PLAN 673: Design for Sustainable Transportation</i>	3
	<i>PLAN 678: Applied Transportation Studio</i>	<u>3</u>
		15
Summer Semester I	CVEN 685: Directed Studies	2
	CVEN Summer Course ⁺	<u>2</u>
		4
Minimum Hours Standard Degree		32

CTP classes are in *italics*.

* Specific course sequences may vary given the focus area selected by the individual student. The above sequence represents the anticipated schedule for a student pursuing a Master of Science in Civil Engineering degree focused on transportation and urban design.

⁺ The Zachry Department of Civil Engineering is currently revising its curriculum to identify an appropriate 2-credit-hour summer course.

Part III-H: Model Degree Plan for Master of Public Service and Administration Students*

Fall Semester I	BUSH 601: Leadership and Public Administration	3
	PSAA 621: Economic Analysis	3
	BUSH 631: Quantitative Methods in Public Management I	3
	<i>PSAA 611: Public Policy Formation</i>	3
		12
Spring Semester I	BUSH 632: Quantitative Methods in Public Management II	3
	<i>PSAA 622: Public Finance OR PSAA 634: Public Management</i>	3
	<i>PLAN 676: Transportation Investment Decisions</i>	3
	Elective	3
		12
Summer Semester I	Professional Internship	1-6
Fall Semester II	PSAA 675: Capstone I	3
	PSAA 615: Policy Analysis OR PSAA 623: Budgeting in Public Service	3
	<i>PLAN 612: Transportation in City Planning</i>	3
	Elective	3
		12
Spring Semester II	PSAA 676: Capstone II	3
	<i>PLAN 678: Applied Transportation Studio</i>	3
	Elective	3
	Elective	3
		12
Minimum Hours Standard Degree		49

CTP classes are in *italics*.

* Specific course sequences may vary given the focus area selected by the individual student. The above sequence represents the anticipated schedule for a student pursuing a Master of Public Service and Administration degree focused on transportation and public policy.

Part IV: Summary of Steps Required to Obtain the Certificate

Students are strongly encouraged to meet with a member of the CTP Council (in particular, the certificate coordinator) prior to filing an application and completing a degree plan.

Step One: Application for Admission

The student will complete an Application for Admission to the Graduate Certificate in Transportation Planning Program and attach to it a copy of the degree plan signed by the student's Graduate Advisory Committee and the head of the student's department. The CTP Council will review the application for compliance with the requirements for content. Applications submitted after filing a degree plan can usually be expected to require a revision of the degree plan and may delay timely progress toward degree and certificate completion.

Step Two: Review of the Final Abstract Submission

Master's-level students must provide the CTP Council with an abstract and any supporting justification that may be required to evaluate the topical relevance of transportation planning to their professional study, professional paper, or thesis if such a product is required in their degree program. This information must be submitted after the manuscript has been approved by the student's Graduate Advisory Committee. Doctoral students must provide the CTP Council with an abstract and any supporting justification that may be required to evaluate the topical relevance of transportation planning to their dissertation. This information must be submitted after the defense of the dissertation proposal. The CTP Council will review the Final Application for compliance with the requirements for content and forward its recommendation to the Graduate Programs Office.

Step Three: Issue of the Certificate

At the time the student is approved for receipt of a relevant graduate degree, the Graduate Programs Office in the College of Architecture (COA) will review the approved certificate courses and advise the dean of the COA of successful completion. The dean of the COA will then authorize the granting of the certificate.

Part V: Policy for Maintaining Student Records

Official Certificate in Transportation Planning program records consist of the Application materials, a copy of the approved degree plan (and any subsequent petitions that may impact the previously approved program), an abstract of the final project topic, and any official correspondence. These records will be kept in the official student folders in the COA Graduate Programs Office. For reference purposes, the COA Graduate Programs Office will create and maintain a database showing all students who have received the certificate or are currently enrolled in the certificate program. The information gathered includes:

- name;
- degree program;
- date of application;
- date of actions for each step in the process of obtaining a certificate;
- title of the project, paper, thesis, or dissertation;
- name of the chair of the Graduate Advisory Committee;
- date of the degree/certificate awarded;
- permanent/current address/email; and
- employment data.

This database will be accessible by the Transportation Planning Program office and the Hazards Reduction and Recovery Center, which also maintains hardcopy files for developing data on the career histories, addresses, email addresses, etc. of certificate holders and current students. Student grades will not be available outside the COA Graduate Programs Office, and personal data will not be released, except in accordance with state law and university guidelines.

Application for Admission to the Certificate in Transportation Planning Program

Student Information:

Name: _____ Student ID Number: _____

Address: _____

Phone(s): _____ Email: _____

Date of Application: _____

Degree Information:

Department: _____

Degree Program: (please circle)

Doctoral Degree

Ph.D. (ARCH) Ph.D. (URSC) Ph.D. (Other) _____

Master's Degree

M.ARCH MS (Arch) MLA MUP MSLD MS (COMG) MS (VIZA)

MA/MS (Other) _____

Chair of Graduate Advisory Committee: _____

Expected Completion Date: _____

Please attach a preliminary description or final abstract of dissertation, final study, thesis, or professional report or paper, if available.

Petition to Graduate and Final Paper Proposal for the Graduate Certificate in Transportation Planning Program

Submit this form to the program assistant of the Hazards Reduction and Recovery Center.

Student Information:

Name: _____ Student ID Number: _____

Address: _____

Phone(s): _____ Email: _____

Date of Application: _____

Degree Information:

Department: _____

Degree Program: (please circle)

Doctoral Degree

Ph.D. (ARCH)

Ph.D. (URSC)

Ph.D. (Other) _____

Master's Degree

M.ARCH

MS (Arch)

MLA

MUP

MSLD

MS (COMG)

MS (VIZA)

MA/MS (Other) _____

Scheduled Graduation Date: _____

Approved (Faculty Use Only):

Graduate Advisor Certificate Coordinator

If a dissertation, final study, thesis, or professional report is required for your degree, attach a one-page abstract to this form.

Student Degree Plan for the Graduate Certificate in Transportation Planning

List the courses you propose to meet the Certificate in Transportation Planning requirements.

Department Abbreviation	Course Number	Course Title	Credit Hours

Signature of Student

Date

Approval Recommended:

Certificate in Transportation Planning Council

Date

<u>Graduate Programs Office</u>	<u>CTP Program Office</u>	<u>Student</u>	<u>Chair, Student's Graduate Advisory Committee</u>



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