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# *PROCEEDINGS*

## *Twenty-seventh Annual Meeting*

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TRANSPORTATION RESEARCH FORUM

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**TRANSPORTATION RESEARCH FORUM**  
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# Transportation Education in the United States: A Survey

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## I. INTRODUCTION

Transportation, distribution and logistics education is at a crossroads. The need has never been greater to provide relevant education for young people planning a career in transportation/distribution/logistics (TDL). Many of the old courses emphasizing laws, rules, and regulations are no longer relevant, and the text books written only a few years ago are obsolete in this changed environment.

Carriers and shippers alike are in a state of turmoil as they find themselves operating in a totally alien situation. After decades of protection by federal and state governments, and being subjected to stifling regulations, carriers today are operating in a marketplace that has fewer rules to follow, and what rules there are not clear, and in many cases unintelligible and consequently unenforceable.

The ICC is essentially a paper tiger, offering virtually no direction to the industry it has dominated for nearly a hundred years. The individual states are also in a state of flux, some imposing strict regulations on the carriers and others totally deregulated. It is little wonder that the carriers, and the shippers, find it difficult adjusting to such confusion.

The problem is a serious one: that is, how should we educate our university students in TDL? Since there is obviously no simple solution, it is important that the realities of the problem be faced and basic answers found. The purpose of this research is to learn more about specific TDL courses currently offered at major universities around the country.

## II. METHODOLOGY

We have selected as the source for our data major universities offering programs in transportation, distribution and logistics. We are indebted to a 1985 study prepared for the Council of Logistics Management by Paul H. Zinszer, "A Study of University Programs in Logistics and Industry Demand for Entry Level Logistics Employees."<sup>1</sup> Identified in this study are 100 universities with either a major or minor in logistics at either the undergraduate or graduate level. It provides information concerning program titles, majors and minors, number of graduates, number of courses, number of faculty, and whether or not there is a Ph.D. program.

The research in this paper is narrower in scope, concentrating on specific courses offered. We have surveyed the same universities, analyzing their catalogs to determine undergraduate courses which include transportation, distribution, or logistics. The purpose of this paper is not to evaluate the individual courses or to express any subjective opinion as to their merit, but rather to provide objective data which the universities might use in their future curriculum planning. It is our premise that, before

changes can be recommended in TDL programs, one must first be aware of what courses are currently being offered. A follow-up study will be conducted to determine the various universities' plans for changes in the near future, as well as educator's opinions as to what additional changes should be made.

The present study is restricted to undergraduate courses in transportation, distribution, and logistics taught in colleges of business. There are other closely related areas of study which could possibly have been included but were not. It was difficult to draw the line on what to include and what not to include in some cases, but our primary interest is transportation, distribution, and logistics—all from a pragmatic business perspective. Courses *not* included in this study are the following: transportation engineering, transportation geography, production and inventory control, capacity management, production operations, acquisition or purchasing, planning, travel, channels, or aviation. It certainly might be argued that several of these courses should have been included, and perhaps future research will do this, but again, our primary interest is TDL. Consequently, for the most part, the courses which are *included* contain the words transportation, distribution or logistics in their titles.

## III. GENERAL FINDINGS

Fifty nine universities from thirty different states were represented in the study, and 296 TDL courses were identified and categorized into one of four categories: transportation, distribution, logistics, and problems. Sub-categories were also observed, especially in the transportation area. The number of courses (not differentiating between semester and quarter courses) in each category is as follows:

Transportation .....	171
Distribution .....	36
Logistics .....	42
Problems .....	47
Total .....	296

The top ten universities in terms of number of TDL courses offered are as follows:

State University	No. of courses
1. CA Golden State Univ.	21
2. TN Univ. of Tennessee	16
3. PA Pennsylvania State	16
4. FL Florida International	14
5. FL Univ. of North Florida	14
6. IL Western Illinois Univ.	12
7. NY Syracuse University	11
8. NY New School for Social Res.	11
9. IN Tri-State University	10
10. AZ Arizona State Univ.	10
Total	115



A listing of course titles in each of the major categories follows:

## 1. Transportation

Of the 171 transportation courses, 35 are general in nature, including 12 which are introductory (Principles or Fundamentals.) Other titles include Transportation Modes, Transportation Systems Analysis, General Transportation, Transportation Planning Analysis, Transportation Operations and Management, Transportation and Distribution Operations, Business Transportation, Transportation Systems and Services, Modern Transportation, and Advanced Transportation Management.

The other transportation courses include the following:

### 29 Carrier courses

Titles include Highway Transportation, Motor Carrier Management, Applied Carrier Management, Carrier Management, Interstate Motor Transportation, Transcontinental Motor and Freight Forwarder Transportation I and II, and Land Transportation Systems. There is also a course in Air and Water Transportation Systems and one in Air Travel Management.

### 26 Traffic Courses

Titles include Advanced Traffic, Industrial Traffic Management, Transportation and Traffic Management, and Introduction to Traffic and Distribution Management. Included under Traffic are also claims courses, such as Carrier Liability and Claims Management, Survey of Transportation and Freight Claims Procedures, and Law of Freight Claims. Rate courses include Transportation Pricing Strategies, Transportation Rates and Tariffs, Pricing of Distribution, Transportation Ratemaking, and Rail Rate Structures and Tariffs.

### 31 Transportation Law, Regulatory, or Policy Courses

Titles include Transportation Regulatory Systems, Transportation Regulatory Theory and Practice I and II, Current Public Policy Issues, Interstate Commerce Law and Practice, Transportation Law and Public Policy, Interstate Commerce Transportation Law, Transportation and Finance, and Transportation and Logistics Strategy and Policy.

### 15 Urban or Passenger Courses

Titles include Urban and Rural Transportation Management, Management Issues in the Passenger Transportation Industry, Urban Transportation Economics, and Urban Transportation.

### 13 International Transportation Courses

Titles include International Transportation, Practice and Problems in Export/Import Business, International Logistics, International Transportation and Logistics, and Export/Import Traffic Management and Procedures.

### 15 Transportation Economics Courses

Titles include Economics of Transportation, Economics in Transportation Development, Transportation Economics, and Freight Transportation Economics.

## 7 Other Transportation Courses

Titles include Transportation Marketing and Sales Strategy, Transportation and Energy Interrelationships, Transportation Labor, History of Transportation and Its Control, Transportation of Dangerous and Hazardous Materials, and Computer Methods.

## 2. Distribution

The 36 Distribution courses include the following titles:

- Physical Distribution Management
- Distribution Systems
- Distribution Management
- Distribution Strategy
- Advanced Distribution Management
- Theory of Transportation and Distribution Systems
- Strategic Decision Making in Transportation and Distribution Organizations
- Transportation and Distribution Operations
- Traffic and Distribution Systems
- Traffic and Physical Distribution
- Physical Distribution
- Survey of Traffic and Distribution Management
- Physical Distribution Management Strategies
- Physical Distribution Logistics
- Logistics of Physical Distribution Systems
- Logistics and Physical Distribution Management
- Materials Handling and Warehousing Management
- Research Methodology in Transportation Distribution Systems
- Transportation-Distribution Development Policy
- Warehousing and Terminal Management

## 3. Logistics

The 42 Logistics Courses include the following titles:

- Logistics Management
- Advanced Logistics Management
- Logistics Systems Analysis
- Logistics Subsystems Analysis
- Applied Logistics Analysis
- Production/Operations/and Logistics Management
- Materials and Logistics Management Policy
- Marketing Logistics
- Micro-Logistics
- Theory of Business Logistics
- Business Logistics and Channel Management
- Business Logistics Management
- Transportation and Business Logistics
- Transportation Logistics
- Logistics Supply Management
- Quantitative Methods in Transportation and Logistics
- Transportation and Logistics Research
- Business and Government Logistics
- Advanced Government Logistics

#### 4. Problems Courses

The 47 *Problems Courses* include the following titles:

- Seminar in Logistics/Transportation
- Seminar in Transportation and Logistics Models
- Seminar in Transportation and Physical Distribution
- Logistics Systems Management Seminar
- Honors Seminar in Transportation and Distribution Management
- Problems in Transportation
- Selected Topics
- Special Topics
- Special Topics in Transportation
- Independent Studies
- Independent Study in Transportation and Physical Distribution
- Current Topics in Transportation and Logistics
- Supervised Readings in Transportation and Logistics
- Directed Individual Study
- Directed Study in Transportation and Distribution
- Transportation Internship
- Transportation and Distribution Management Internship
- Practicum in Business Logistics

#### IV. ANALYSIS

As stated earlier 59 universities and 296 courses are represented in the study. Each of the top ten schools (in number of TDL courses) offer 10 or more courses, a total of 115 courses, or 39% of the total. The next 14 schools offer between 5 and 9 courses, a total of 86 courses, or 29% of the total. Eight schools offer 4 courses, four offer 3 courses, eight offer 2 courses, and 15 offer one course.

It is obvious that there is no lack of imagination in selecting names for TDL courses. The variety of courses is much greater in the transportation category than in the other categories. This is no doubt due to the fact that transportation courses have been offered for a much longer period of time than have distribution and logistics courses. Most schools offering introductory courses in transportation (12) call them principles, or fundamentals, or introduction to, or simply title the course Transportation. Others have added either distribution or logistics to the title, e.g., Principles (or Fundamentals) of Transportation and Distribution (or Logistics).

Many of the other general transportation courses (23) include the words analysis, systems, operations, or management in their titles. Presumably, these are more advanced transportation courses. Other courses, simply use the word transportation preceded by general, or business, or modern, and it very well may be that these are introductory courses. It would appear that all of the general (sounding) courses could be divided into two groups—basic and advanced transportation.

The carrier courses (29) are heavily oriented toward the motor carrier industry, with titles generally reflecting the words motor carrier, or highway. The other modes do not appear to be well represented, at

least in the course titles. It is assumed, however, that courses with titles such as Carrier Management include all modes of transportation.

Traffic courses (26) are of three main types, those of a general nature, those having to do with claims, and those having to do with ratemaking or pricing. The general courses (14) sometimes include the words Transportation or Distribution, and frequently add the word Management. There are only five courses dealing exclusively with freight claims. For most schools, this topic is a bit too narrow to cover an entire school term. There are ten ratemaking or pricing courses—again, a very specialized topic, especially today under near deregulation.

Many of the Transportation law, regulatory, or policy courses (31) include the words theory, practice, or issues, but others merely specify the basic words Transportation Law or Transportation Policy.

The Urban or Passenger courses (15) are few in number, but this may be because they are taught in a College or University other than Business and consequently not identified in the study.

International Transportation courses (13) are also few in number, but again the reason might be that the topic of International Transportation might be included in courses in International Business, International Marketing, or International Management courses.

The Transportation Economics courses (15), for the most part, not surprisingly are taught in Economics departments and typically carry titles of Economics of Transportation or simply Transportation Economics. It may be that these courses could have been included with the general, introductory transportation courses. We would presume, however, that they are more theoretical in nature than courses taught in Marketing, Management or TDL Departments.

The other Transportation courses (7) are considered sufficiently unique that they do not fit into any of the above subcategories. Perhaps future surveys will reveal more schools offering courses in Transportation Marketing, Transportation and Energy, Transportation Labor, Transportation Theory, Hazardous Materials, or Computer Methods in Transportation.

It is difficult to distinguish between the Distribution courses (36) and the Logistics courses (42). They both include in their course titles words which are strikingly similar, i.e., management, systems, strategy, and operations. Some of the courses also include the words Traffic and Transportation; the word Distribution appears in some Logistics courses; and the word Logistics appears in some Distribution courses. The only courses under the Distribution category that appear to be other than general Distribution are these specific sounding courses: Materials Handling and Warehousing Management, Warehousing and Terminal Management, and Research Methodology in Transportation Distribution Systems.

In the Logistics category, several types of logistics are identified: Marketing Logistics, Micro-Logistics, Business Logistics, and Government Logistics. Presumably, the other logistics courses are more general and include all of these types.

The Problems courses (47) include Seminars, Topics, Studies, Readings, Internships, and Prac-

ticians. These are the advanced courses in Transportation, Distribution, and Logistics.

## V. IMPLICATIONS AND CONCLUSIONS

As stated in a recent issue of *Handling and Shipping Magazine*<sup>2</sup> "Experience well may be the best teacher, but higher and ongoing education increasingly is becoming a requisite for individuals with career aspirations in transportation, physical distribution and logistics management."

The article also notes that "Today, more than ever, colleges and universities across the country are instituting or improving programs concentrated in areas that, for the most part, 20 years ago were not considered curriculum material." This sounds encouraging, however, there are still questions to be asked and answers to be found concerning today's TDL curriculums. Are the courses being offered today the right courses? Do they effectively educate our young people to fill the approximately 4500 per year entry level college graduate positions in logistics, as projected by Zinszer's study? His study also estimates demand for these employees to grow at the rate of 15% per year for the next three years.

Without a doubt, much more study needs to be done in the area of TDL curriculum development. The San Francisco Roundtable of the Council of Logistics Management conducted a 1985 Education Survey and determined that the most important courses for the future, as perceived by industry, are as follows:<sup>3</sup>

1. Financial Analysis
2. Quantitative Analysis
3. Project Management
4. Inventory Control
5. PD Cost Analysis
6. Computer Training
7. Industrial Traffic
8. Accounting
9. Transportation Economics
10. Contract Negotiations

If these courses are indeed the ones that are most important, then our TDL curriculums need a major overhaul. Our survey reveals very few courses in today's categories that refer to financial analysis or quantitative analysis, or most of the other courses listed above. It may be that the material is being taught in existing TDL courses or in other AACSB mandated courses. But even if this is the case, TDL course titles and course descriptions should be changed to reflect the fact.

Improved curriculum development in transportation, distribution, and logistics is imperative. Changes are required to reflect today's environment, and the Universities should be leading the way, playing a pro-active role rather than reacting, as has traditionally been the case.

## ENDNOTES

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<sup>1</sup> Zinszer, Paul H. 1985. A Study of University Programs in Logistics and Industry Demand for En-

try Level Logistics Employees. Prepared for Council of Logistics Management. Oak Brook, Illinois.

<sup>2</sup> Eddy, Art. March 1986. Higher Education—Meeting Challenge of Supply, Demand. *Handling and Shipping Magazine*.

<sup>3</sup> San Francisco Roundtable. Council of Logistics Management. January 16, 1986. 1985 Education Survey For Northern California.

Undergraduate Catalogs from the following universities:

U. OF ALABAMA U.  
 ARKANSAS STATE U.  
 ARIZONA STATE U.  
 CAL STATE—L.A.  
 CAL STATE—SAC.  
 CAL STATE—FRESNO  
 CAL STATE—HAYWARD  
 GOLDEN GATE U.  
 U. S. C.  
 U. OF COLORADO—DEN.  
 U. OF COLORADO  
 FLORIDA INT'L U.  
 FLORIDA STATE U.  
 U. OF MIAMI  
 U. OF N. FLORIDA  
 GEORGIA COLLEGE  
 U. OF HAWAII  
 U. OF IOWA  
 IOWA STATE U.  
 BOISE STATE U.  
 WESTERN ILL. U.  
 ELMHURST COLLEGE  
 INDIANA U.  
 PURDUE U.  
 TRI-STATE U.  
 EASTERN KY. STATE  
 LA. TECH. U.  
 NORTHEASTERN U.  
 U. OF MARYLAND  
 EASTERN MICHIGAN U.  
 MICHIGAN STATE  
 WESTERN MICHIGAN U.  
 GEO WASHINGTON U.  
 U. OF MISSOURI  
 MISS. STATE U.  
 EASTERN MONTANA U.  
 NEW MEXICO U.  
 NEW SCHOOL SOCIAL RESEARCH  
 SYRACUSE U.  
 KENT STATE U.  
 OHIO STATE U.  
 U. OF AKRON  
 YOUNGSTOWN STATE U.  
 OKLAHOMA STATE U.  
 U. OF OKLAHOMA  
 OREGON STATE U.  
 U. OF OREGON  
 DREXEL INST. TECH.  
 PENN STATE U.  
 ROBERT MORRIS COLLEGE  
 SHIPPENSBURG U.  
 TEMPLE U.  
 MEMPHIS STATE U.  
 U. OF TENNESSEE  
 GEORGE MASON U.  
 VA. POLY TECH INST  
 WILLIAM AND MARY  
 WASH. STATE U.  
 U. OF WISCONSIN—MAD