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</table>
DIRECTORY OF CONSTRUCTION ENGINEERING PROGRAMS
IN
ORGANIZATION AND MANAGEMENT OF CONSTRUCTION

PREPARED BY
INTERNATIONAL COUNCIL FOR BUILDING RESEARCH,
STUDIES AND DOCUMENTATION
W-65 COMMISSION ON
ORGANIZATION AND MANAGEMENT OF CONSTRUCTION

MARCH 1982

DEPARTMENT OF THE ARMY
CONSTRUCTION ENGINEERING RESEARCH LABORATORY
CHAMPAIGN, ILLINOIS USA

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**REPORT DOCUMENTATION PAGE**

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<th>10. PROGRAM ELEMENT, PROJECT, TASK AREA &amp; WORK UNIT NUMBERS</th>
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<td>U.S. ARMY CONSTRUCTION ENGINEERING RESEARCH LABORATORY</td>
<td></td>
</tr>
<tr>
<td>P.O. BOX 4005, CHAMPAIGN, IL 61820</td>
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<td>March 1982</td>
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<th>18. SUPPLEMENTARY NOTES</th>
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<td>Copies are obtainable from National Technical Information Service Springfield, VA 22151</td>
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<td>construction management</td>
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<tr>
<td>universities</td>
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<td>directories</td>
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</tbody>
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<tr>
<th>20. ABSTRACT (CONTINUE ON REVERSE SIDE IF NECESSARY AND IDENTIFY BY BLOCK NUMBER)</th>
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<tbody>
<tr>
<td>This second edition of a directory of education programs in engineering and management covers 55 programs in 30 countries. CIB Working Commission 65, Organization and Management of Construction, plans to update the directory periodically.</td>
</tr>
</tbody>
</table>

DD FORM 1473 EDITION OF 1 NOV 68 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)
The Working Commission W-65, Organization and Management of Construction, (OMC) consists of experts who are addressing research contained in the terms of reference which reads in part: "To develop effectiveness calculations and techniques for evaluating singularly and collectively various organizational forms utilized in planning, architecture, engineering, construction and for industrialized construction." A major aspect of the program is to effect the transfer of the research into professional practice; a vital mechanism in this transfer are the educational programs in engineering and management.

To facilitate the interchange among experts in education for OMC the Commission recommended the publication of a Directory of education programs. This is the second edition of the Directory. W-65 intends to update this Directory on a regular basis. Information on additional educational programs is welcomed; it should be forwarded to Dr. V. Handa of the Waterloo Construction Council, University of Waterloo, Waterloo, Ontario, CANADA N2L 3GI. Additional copies of the Directory are available at a modest charge from the National Technical Information Service (NTIS), Springfield, VA 22151, USA.

This Directory is the result of the efforts of many individuals. The work of the late Mr. D. Aird for the study part of the Directory is worthy of special recognition. The survey would not have been possible without the aid of the University of Waterloo and the Waterloo Construction Council.

Information on W-65 can be obtained by contacting the undersigned at the US Army Construction Engineering Research Laboratory, P. O. Box 4005, Champaign, IL 61820, USA. Information on CIB can be obtained by contacting the Secretary General CIB, Postbus 20704, Weena 704, Rotterdam, HOLLAND.

23 March 1982
Champaign, Illinois, USA

L. R. SHAFFER
Coordinator, W-65
The Study elicited responses from some 55 institutions of which 26 were located in the United States ("USA") and 29 in Other countries ("Other"). These schools offer the following programmes:

<table>
<thead>
<tr>
<th>Programme</th>
<th>USA</th>
<th>OTHER</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor's</td>
<td>22</td>
<td>12</td>
<td>34</td>
</tr>
<tr>
<td>Master's</td>
<td>15</td>
<td>14</td>
<td>29</td>
</tr>
<tr>
<td>Doctorate</td>
<td>9</td>
<td>9</td>
<td>18</td>
</tr>
</tbody>
</table>

The observations which follow are necessarily generalized since the questionnaire was subject to some interpretation; some questions were not answered; and in a few cases the response data apparently referred to other than construction programmes alone (usually departments/faculties of civil engineering or architecture). Nevertheless, the results should be of some interest.

The Institutions

Generally, Schools of Construction are relatively new. Most Bachelor-level programmes were established during the 1960's and 1970's, although two programmes in the USA date back over 75 years. Graduate-level programmes slightly pre-date the Bachelor schools in the USA where several were established in the 1950's. Almost all graduate programmes in the Other countries were set up only within the last decade.

Virtually all Bachelor programmes are of 4 year's duration after entry from high school. Master's degrees usually require 1 to 1½ years in the USA and 1½ to 2 years in Other countries where the entrance requirement is a Bachelor's degree. To obtain a Doctorate will uniformly require a minimum of three years beyond the Master's degree.
The size of the institutions, as defined by full-time student enrollments, varies widely:

<table>
<thead>
<tr>
<th></th>
<th>USA</th>
<th>OTHER</th>
<th>TOTAL</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>RANGE</td>
<td>AVER.</td>
<td>RANGE</td>
</tr>
<tr>
<td>BACHELOR'S</td>
<td>5 - 430</td>
<td>105</td>
<td>20 - 450</td>
</tr>
<tr>
<td>MASTER'S</td>
<td>1 - 45</td>
<td>15</td>
<td>1 - 40</td>
</tr>
<tr>
<td>DOCTORATE</td>
<td>1 - 9</td>
<td>5</td>
<td>1 - 11</td>
</tr>
</tbody>
</table>

Part-time students do not comprise a significant portion of enrollments in Bachelor's programmes. Only in 4 USA and 2 Other institutions are part-time programmes substantial at the undergraduate level. On the other hand, one-quarter of the graduate programmes in the USA have large part-time enrollments, and over one-half of the Other programmes at this level provide for part-time students on a large scale.

Foreign students comprise only 3% of enrollment in Bachelor's programmes in the USA and 8% in Other countries. At the Master's level Other countries retain about the same proportion of foreign students (9%) but in the USA this figure reaches over 50%.

THE Programmes

Programmes leading to a Bachelor's degree in the USA almost uniformly require 124 - 138 semester hours, or equivalent, study. Responses from Other countries are difficult to interpret but since nearly all such programmes are of 4 year durations, the course loads appear to be equivalent.

At the Master's level, typical course requirements are approximately 30 semester hours in the USA. The common response from Other countries averages 8 - 9 "courses" (range is 7 - 12 "courses") which implies a somewhat heavier course load, than in the USA, even allowing for the additional time durations discussed earlier.

Typically there is no thesis requirement for a Bachelor's degree in the USA. About one-third of the Other institutions require a thesis.
Over half the USA Master's programmes do not require a thesis, and a few others make it optional. In contrast, most Other programmes do require a thesis, and those which don't, demand completion of a major study report.

Virtually all Doctoral degrees require a thesis.

The specifics of courses which are included within the Construction programmes are almost infinitely variable. Very little commonality can be observed from the survey responses except that core courses for USA programmes do display some evidence of consistency (or popularity). This is likely due to the influence of the Associated Schools of Construction or the American Council for Construction Education.

The following course topics are listed in decreasing order of their mention in the survey. (Note that more than one course of a given topic may be offered within a single programme.)

Construction Estimating and Bidding
Construction Management
Building Structures
Mechanical/Electrical Equipment
Construction Methods and Equipment
Construction Materials
Construction Planning and Control
Construction Techniques
Construction Contracts
Drawing/Graphics
Introduction/History of Construction
Computers; simulation
Site Development
Surveying
Labour Relations
Environmental Systems
SCHOLARSHIPS
Perhaps three-quarters of all the Institutions offer some scholarships or other financial incentives. However, the general impression is that these are very limited both in number and amount.

SOURCES OF FUNDING
Costs of Administration are almost entirely funded by government everywhere. Four schools (2 in USA and 2 in Other countries) are supported by industry in this respect, and represent an interesting exception. Two private schools in USA obtain administrative funding from other sources.

Scholarships are funded predominantly by governments, but also substantially by industry especially in the USA. Private sources of scholarships is important to the private schools.

Research funds, again, depend heavily upon government grants or contracts, particularly in Other countries. Industry support represents probably 10 - 15% of total research funding in both the USA and Other countries.

STAFFING
Most schools function with quite restricted numbers of faculty, as summarized below:

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<thead>
<tr>
<th></th>
<th>USA</th>
<th>OTHER</th>
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<tbody>
<tr>
<td></td>
<td>Range</td>
<td>Aver.</td>
</tr>
<tr>
<td>Full Time</td>
<td>1 - 8</td>
<td>3</td>
</tr>
<tr>
<td>Part Time</td>
<td>0 - 25</td>
<td>3</td>
</tr>
<tr>
<td>Guests</td>
<td>0 - 12</td>
<td>0</td>
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</tbody>
</table>

It is interesting to note that schools in USA split evenly between full and part-time faculty and do not utilize guest lecturers. In contrast, Other countries have a slightly larger core of full time instructors and use guest lecturers to a substantial extent.
INDUSTRY INPUT

The survey requested information on the type of input provided by industry to the programmes. This was divided into four categories with the response as shown (percentage of schools deriving support as defined):

<table>
<thead>
<tr>
<th>Category</th>
<th>USA</th>
<th>OTHER</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial, Administrative</td>
<td>25%</td>
<td>10%</td>
<td>20%</td>
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<tr>
<td>Scholarships, Bursaries, etc.</td>
<td>80</td>
<td>30</td>
<td>50</td>
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<tr>
<td>Curriculum Development</td>
<td>50</td>
<td>25</td>
<td>40</td>
</tr>
<tr>
<td>Overseeing Body, Industry Liaison</td>
<td>40</td>
<td>35</td>
<td>40</td>
</tr>
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</table>

It is significant that USA schools obtain substantially larger participation by industry in both Scholarships and Curriculum Development.

RESEARCH

Educational objectives of the Construction Schools are reasonably consistent amongst both USA and Other countries.

Perhaps surprisingly not a single institution indicated Research as an objective. Almost all respondents focussed on Organizational objectives, while over one-third also saw Engineering as an objective.

The lack of emphasis on research and thesis requirements perhaps explains the insignificant amounts of research funding reported. Only nine responses indicated research funding greater than $50,000 per annum.

Research projects reported include:

- Management functions, organization, etc. (11 times)
- O.R. Techniques, Computer Simulation (9 times)
- Building economics, financing, risk (5 times)
- Building Sciences, (5 times)
- Planning, Scheduling, Estimating (5 times)
- Productivity on Site, Methods (5 times)
- Energy conservation (2 times)

No other topic received more than a single reference.
PROGRAMME LISTINGS
February 17th, 1981.

**Study of Construction Programmes**

Name of Institution: UNIVERSITY OF WATERLOO

Faculty/School address: DEPT. OF CIVIL ENGINEERING, CONST. MGMT. GROUP
UNIVERSITY OF WATERLOO, WATERLOO, ONT. CANADA N2L 3G1.

Name, Title of Contact: Dr. W.A. McLaughlin, Director

Name, Title of Respondee: Prof. Dr. V.K. Handa, Professor.

<table>
<thead>
<tr>
<th>Programme/s offered</th>
<th>Degree</th>
<th>Degree</th>
<th>Degree</th>
<th>Non-deg.</th>
<th>Non-deg.</th>
<th>Part of</th>
<th>Other</th>
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<tbody>
<tr>
<td></td>
<td>Bachelor</td>
<td>Master</td>
<td>Ph.D.</td>
<td>Diploma</td>
<td>Certificate</td>
<td>Programme</td>
<td>Specify</td>
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<tbody>
<tr>
<td>Duration (years) - length of Programme</td>
<td>12 months.</td>
<td>(1 part of 8 Sc degree).</td>
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<td>Enrollment</td>
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<tr>
<td>Current Part Time</td>
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<tr>
<td>Current Full Time</td>
<td>8</td>
<td>1</td>
<td></td>
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<tr>
<td>Other (specify) of which</td>
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<td></td>
</tr>
<tr>
<td>National</td>
<td>15</td>
<td>-</td>
<td>60</td>
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<tr>
<td>Foreign</td>
<td>6</td>
<td>1</td>
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<tr>
<td>Admission Requirements</td>
<td>B.Sc. (Eng.) or equivalent.</td>
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<tr>
<td>Course Requirements - list number of courses needed whether thesis or not</td>
<td>8 + Project</td>
<td>6</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Scholarship, Fellowship, Bursaries, etc. available: Yes. | No | N/A |

Language of Instruction: ENGLISH

Total Numbers of Students Graduated:
- National: 72
- Foreign: 8

Indicate % of funding by:
- Government: -
- Industry: 50%
- Other (specify) from fees and grants from the university: 50%

Staff Numbers: Totals (Indicate #’s):
- Faculty Full Time: 3
- Part Time: 1
- Industry, Instructors: (1)
- Speakers: (20)

Industry Input (Please tick):
- Financial Administrative (Y)
- Curriculum Development (Y)
- Scholarship, Bursaries etc. (Y)
- Overseeing Body Industry Liaison (Y)

Comments
Course, Titles, Descriptions

Indicate Text Title (if any)

CE 690 Labour Relations in the Construction Industry
Human relations in industry, people and productivity, development of organized labour in Canada, construction contractors, construction labour law, role and powers of labour unions and management, collective bargaining, construction management negotiations, construction owner-employees.

Books

CE 691 - COMBS/PALMER - CONSTRUCTION FINANCIAL MGMT. (McGraw Hill)
CE 692 - GOLDBERG - CANADIAN BUILDING CONTRACTS (CUMMINS CO.)
CE 693 - R. HARRIS - PRECEDENCE AND ARROW NETWORKING TECHNIQUES FOR CONSTRUCTION (J. WILEY)
CE 694 - CAMPBELL - CONSTRUCTION EQUIPMENT MANAGEMENT (CUMMINS)
CE 695 - P. ALLEN - MANUAL OF LABOUR RELATIONS WITH THE CONSTRUCTION TRADES (CUMMINS, UNI. OF WATERLOO)

Educational Programme Objectives:

TO TRAIN STUDENTS AND INDUSTRY PERSONNEL FOR THE CONSTRUCTION INDUSTRY OWNERS, CLIENTS, CONTRACTORS TO IMPART ADMINISTRATIVE SCIENCE/ARTS AND EXPERIENCE OF THE MOST SUCCESSFUL MANAGERS.

Research (Please tick) Organizational (Applied) (✓) Engineering (Hard) ( )

Research Funding

(Indicate source & amount (US $) National Research Council

$ 20,000 annually.

Describe Nature/objectives of Research

Productivity, Operation Research.

Research Facilities (if any)

No need research facility.

Are there any special features of your programme. Please indicate.

A Co-op feature whereby the programme is split into two parts A & B.

Part A is offered twice in one calendar year. Fall and spring, 15-20 credits.

Similarly Part B is offered the next calendar year twice.

Students can then enroll on a co-op basis in the consecutive year during the winter months when (field) construction activity is at a low ebb and obtain their warrants for their two-semester work.
CIB - W3S
Study of Construction Programmes

Name of Institution: Concordia University
Faculty/School: Centre for Building Studies, Faculty of Engineering and Computer Science

Name, Title of Contact: Dr. Alan D. Russell
Name, Title of Respondent: 

Programme(s) offered | Degree | Non-deg. | Non-deg. | Part of | Other
---|---|---|---|---|---
Bachelor | Master | Ph.D | Diploma | Certificate | Programme

| Year Program Established | 1976 | 1977 |
| Duration (years) - length of Programme | 1977 for 3 years full-time |
| Enrollment | 30 for part-time students |
| Current Part Time | 5 |
| Current Full Time | 4 |

Admission Requirements | B. Eng. or M. Eng. or B. Arch. equiv. (MBA) 
Course Requirements - list number of courses needed whether thesis or not | 13 courses 6 courses & tech. report thesis or 6 courses plus thesis |
Scholarship, Fellowship | Concordia Fellowships, Prov. & Fed. Gov't Scholarships |
Bursaries, etc. available | |

Language of Instruction: English
Total Numbers of Students Graduated: National 10, Foreign 5

National 10 | Foreign 5 | Administration | Scholarship | Research

Indicate % of funding by Government Industry Other (specify)
Staff Numbers: Totals (Indicate F's) Faculty Full Time (3) Part Time (3) Industry, Instructors Speakers

Industry Input (Please tick) | Financial Administrative ( ) Curriculum Development ( ) Scholarship, Bursaries etc. ( ) Overseas Body Industry Liaison ( )

Comments

Course, Title, Descriptions
Indicate Text Title (if any)
Bldg M555 Building Engineering Systems
Bldg M556 Building Economics I
Bldg M557 Building Economics II
Bldg M558 Project Management
Bldg M560 Decision Analysis
Bldg M561 Construction Planning and Control I
Bldg M562 Labour and Industrial Relations in Construction
Bldg M563 Legal Issues in Construction
Bldg M564 Construction Processes
Bldg M565 Construction Planning and Control II
Bldg M781 Business Practices in Construction
Bldg M782 Project Acquisition and Control
Bldg M783 Building Economics I
Bldg M784 Human Factors in Construction
Bldg M785 Business Practices for Construction Management
Bldg M786 Construction Equipment Management
Bldg M787 Selected Topics in Construction Management

NB: Prerequisites are not shown. Students are also encouraged to take selected courses from the MBA programme and Computer Science.

Educational Programme Objectives:
To provide a grounding in the fundamentals of project and construction management and to provide an opportunity for students to synthesize their knowledge through case studies, project work and thesis work.

Research (Please tick) | Organizational (Applied) ( ) Engineering (Hard) ( )

Research Funding (Indicate source & amount (US $)) | National Science and Engineering Research Council (NSERC), Individual construction firms.

Describe Nature/objectives of Research and Research Facilities (if any) | Development of project management information, systems for medium sized general contractors. Risk analysis. Modeling of construction operations and productivity improvement.

Closeout management.

Are there any special features of your programme. Please indicate.

All courses offered in the evening to facilitate attendance by practicing professionals.
Course, Titles, Descriptions
Indicate Tent Title (if any)

CE600 - Construction Management and Organisation.
CE601 - Economics, Contracts and Industrial Relations.
CE602 - Construction Practice, Methods and Techniques.
CE603 - Construction Materials.
CE604 - Structural Design.
CE605 - Site Investigations and Foundations.
CE606 - Construction in the Local Environment.

Project

M.Sc. students must complete the whole programme.
Diploma students must complete three course options and the project.

Educational Programme Objectives:

"The purpose of this post graduate course is to provide instruction in a range of Engineering and Management subjects that may give rise to the many problems that can occur on any Construction project, and thereby to improve the quality of Project Management in Trinidad & Tobago, by allowing a wider perspective of Engineering Economy and Technology to be taken" Research (Please tick)
Organizational (Applied) (Y) Engineering (Hard) (Y)

Research Funding
(Indicate source & amount (US $)) No separate fund.

Describe Nature/objectives of Research and Research Facilities (if any)
Research within this programme is restricted for the students, to work necessary for their course assignments and project. Their research may be on any relevant aspect of Engineering, but the time available is restricted.

Are there any special features of your programme. Please indicate.

The availability of the new improved facilities within the next few years will enable us to rationalise and broaden the content of this post graduate programme. More emphasis will be placed on Computer Techniques, and on multi-disciplinary and group working.
CIB - W65
Study of Construction Programme

February 17th, 1982.

Name of Institution: AUSTRALIAN UNIVERSITY

Address: Auburn University

Dr. L. R. Bell

Associate Professor

Dept. of Civil Eng.

Programmes offered:

Degree: Bachelor, Master, Ph.D.

Non-degree: Certificate Programmes

Specify: Other

Year Programme Established

Duration (years) - Length of Programme

Enrolment:

Current Part-Time:

5+ Current Full-Time:

5+ Other (specify)

3+ of which:

National:

2+ Foreign:

2+

Admission Requirements:

Graduate and GRE test

Course Requirements - List number of courses needed whether thesis or not:

48 credit hrs and thesis

Scholarship, Fellowship

Teaching and research assistantships available

Bursaries, etc., available

Language of Instruction: English

Total Number of Students Graduated:

Indicate 7% of funding by:

Administration:

80% Scholarship:

80% Research:

20%

State:

Other (specify) 20%

Staff Numbers: Totals (Indicate #)

Faculty Full Time (2) Part Time (1)

Industry, Instructors

Speakers

Industry Input (Please tick)

Financial Administrative ( ) Curriculum Development ( )

Scholarship, Bursaries etc. ( ) Overseeing Body Industry Liaison ( )

Comments

Course, Titles, Descriptions

Educational Programme Objectives:

To provide qualified students with an opportunity for advanced training and specialization and to enable these students to gain experience in conducting research and in the interpretation and communication of their findings.

Research (Please tick)

Organisational (Applied) ( ) Engineering (Hard) ( )

Research Funding

(Indicate source & amount (Dola))

Auburn University Engineering Experiment Station ($20,000) and others

Describe Nature/objectives of Research:

Application of statistics, computer simulation and principles of operations research to construction operations, organizational Research Facilities (if any) structures and highway maintenance.

Are there any special features of your programme. Please indicate.
Study of Construction Programmes

February 17th, 1981.

Name of Institution: Bowling Green State University
Faculty/School: Construction/Design Unit
Address: School of Technology

Name of Contact: Prof. William B. Brewer
Name of Respondent: 

Programmes Offered:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Bachelor</th>
<th>Master</th>
<th>Ph.D.</th>
<th>Non-deg. Diploma</th>
<th>Non-deg. Certificate</th>
<th>Specific</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year Program Established</td>
<td>12</td>
<td></td>
<td></td>
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<tr>
<td>Duration (years) - length of Program</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enrollment</td>
<td>Current Full Time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>150</td>
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<tr>
<td>Current Part Time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (specify)</td>
<td>of which National</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>125</td>
</tr>
</tbody>
</table>

Admission Requirements:

| H.S. Diploma |          |

Course Requirements - list number of courses needed whether thesis or not:

Scholarship, Fellowship

Bursaries, etc. available: Yes

Language of Instruction: English

Total Numbers of Students Graduated:

National | Foreign |

Indicate % of funding by:

Government | Administration | Scholarship | Research |

Industry | Other (specify) |

Staff Members: Totals

Faculty Full Time (F) Part Time (P) Industry, Instructors, Speakers

Industry Input

Financial Administrative ( ), Curriculum Development ( )
Scholarship, Bursaries etc. ( ) Overseas Study

Comments:

Course, Titles, Descriptions

Indicate Text Title (if any)

Introduction to Programming 1
Fortran Programming
College Physics
Basic Calculus 1
Basic Calculus II
Calculus and Analytic Geometry 1
Calculus and Analytic Geometry II
Principles of Organization and Management
Organizational Theory and Behavior
General Business Law
Varieties or Writing
Principles of Speech Communication
Technical Writing
Business Communications
Visual Communication Technology
Principles of Sociology
General Psychology

Educational Programme Objectives:

Graduate personnel with an understanding of "construction" who could be gainfully employed by the industry.

Research (Please tick)

Organizational (Applied) ( ) Engineering (Hard) ( )

Research Funding

(Indicate source & amount (US $))

Describe Nature/objectives of Research and

Research Facilities (if any)

Are there any special features of your programme. Please indicate.

Our program contains three 12 week, coop sessions. This gives the student to see the real world and what makes the industry function.
February 17th, 1981.

Course, Titles, Descriptions
Indicate Test Title (if any)
20A General Education
20A Mathematics/Science
15A Business Management
45A Construction: Introduction to Construction
100% Construction Graphics
Mechanical and Electrical Equipment for Buildings
Advanced Environmental Technologies in Construction
Materials and Methods of Construction I, II
Construction Equipment and Methods
Construction Productivity
Construction Management
Construction Contracts
Construction Practice
Construction Estimating
Wood and Steel Structures
Concrete and Foundation Structures
Surveying
Soil Mechanics
Senior Seminar

Educational Programme Objectives:
To provide the basic (BS) professional degree for the Constructor. To this end
the curriculum provides the balanced cultural, technical, managerial
and professional foundation necessary for a career and for further individual
development.

Research (Please tick) None Organisational (Applied) ( ) Engineering (Hard) ( )

Research Funding
(Indicate source & amount (US $) None

Describe Nature/objectives of Research
None

Research Facilities (If any) Time-lapse and Computer

Are there any special features of your programme. Please indicate.
Accredited by the American Council for Construction Education
Number Associated Schools of Construction

CIB - 685
Study of Construction Programmes

Name of Institution: BRADLEY UNIVERSITY

Faculty/School: Peoria, IL 61625 U.S.A.

Name, Title of Contact: M.I. Guest, AIC, Professor and Department Chairman
Name, Title of Respondent: M.I. Guest, AIC, Professor and Department Chairman

Programmes offered
Degree Bachelor Master Ph.D. Diploma Certificate Programme Specify

Year Programme Established: 1968
Duration (years) - length of Programmes: 4

Enrollment:
Current Part Time: 125
Current Full Time: 120
Other (specify) of which:
National: 120
Foreign: 5

Admission Requirements: ACT Composite 20 (min) or SAT Total 950 (min); High School graduation
upper one-half of class; high school physics and pre-calculus mathematics

Course Requirements - list number of courses needed whether thesis or not
124 semester hours (minimum); no thesis

Scholarship, Fellowship
Bursaries, etc. available Few

Language of instruction: English

Total Numbers of Students Graduated
National 415 Foreign 10

Indicate I of funding by Government Industry
Administration Scholarship Research

Staff Numbers: Totals
(Indicate %)
Industry Input
(Percent tick)
Financial Administrative (6 Curriculum Development (6)
Scholarship, Bursaries etc. (6) Overseeing Body Industry Liaison (6)

Comments

A.D. Certain
Course, Titles, Descriptions
Indicate Test Title (if any)

Description of core courses for the program is attached.

Educational Programme Objectives:
Preparation of Civil engineers who are interested in one of the two areas
1. Transportation System planning
2. Management of Constructed Facilities

Research (Please tick)
Organizational (Applied) (E) Engineering (Hard) ( )

Research Funding
Indicate source & amount (US $)
$200,000 (U.S. DOT, Pennsylvania DOT)

Describe nature/objectives of research
1. Peak hour travel demand analysis
2. Traffic management during the reconstruction of a major arterial highway.

Research Facilities (if any)

Are there any special features of your programme. Please indicate.

Comments
* The faculty members also teach undergraduate courses which are not a part of this graduate program.
CORE COURSES FOR ENGINEERING PLANNING AND MANAGEMENT PROGRAM

12-701 Analysis of Network-Based Systems (Fall)
Introduction to topological and algebraic properties of networks; analysis of networks governed by potential relations, flow relations or constitutive equations; applications to network-based systems such as surveying networks, CPM-PERT networks, traffic networks, hydraulic networks and structural networks; treatment of data and information structures.

12-702 Methods of Computer-Aided Design (Spring)
Focuses on the design and implementation of programs for analysis and synthesis in architecture and civil engineering. Both batch and interactive programs are considered. Topics covered include: data structures, the design of large data bases, graphic display techniques, formal and problem-oriented languages, decision tables and other methods of program organization.

12-703 Demand Analysis and Forecasting (Fall)
Formulation and measurement of demand as a function of causal variables (such as prices, socio-economic conditions, etc.); discussion of the principal techniques for forecasting the usage of engineering systems and facilities.

12-704 Reliability and Risk Analysis (Spring)
Methods for assuring a high degree of safety and reliability in the design and operation of engineering projects: codes, inspection, quality assurance and quality control procedures, redundancy and fail-safe designs. Practical measures of risk and reliability levels with applications to particular projects. Differences in philosophy and measurement techniques.

12-705 Project Management and Financing (Fall)
Studies of the planning, scheduling and evaluation of large scale capital projects; construction safety and productivity; human factors in project management. Operational and financial risks of projects to an organization; cost estimates and controls; effects of inflation. Impact of large scale projects to local environments.

12-706 Public Investment Planning and Pricing (Spring)
Economic framework for identifying and analyzing investment and operating options facing both public agencies and private firms; economic efficiency, utilization, pricing and investment (both in theory and in practice); multi-objective evaluation.
# Study of Construction Programmes

**February 17th, 1981.**

**Name of Institution**: Case Western Reserve University

**Faculty/School**: Department of Civil Engineering

**Name, Title of Contact**: George S. Biselli

**Name, Title of Associate Professor**:

**Programmes offered**

<table>
<thead>
<tr>
<th>Degree</th>
<th>Bachelor</th>
<th>Master</th>
<th>Ph.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honours</td>
<td></td>
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</tr>
<tr>
<td>Normal</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Year Program Establishment**: 1979

**Duration (years) - Length of Program**: 2 x 2 YEAR

**Enrollment**

| Current Part Time | 0 | 0 | 0 |
| Current Full Time | 4 | 4 | 0 |
| Other (specify)   |   |   |   |

**National**

**Foreign**

**Admission Requirements**

<table>
<thead>
<tr>
<th>Civil Eng.</th>
<th>Quarterly</th>
<th>Bachelor</th>
<th>University</th>
<th>Honours</th>
<th>Graduate</th>
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</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

**Course Requirements - List of courses needed**

**Scholarship, Fellowship, etc. available**

<table>
<thead>
<tr>
<th>Some</th>
<th>Very Poor</th>
<th>Very Good</th>
</tr>
</thead>
</table>

**Language of Instruction**: English

**Total Numbers of Students Graduated**

<table>
<thead>
<tr>
<th>Administration</th>
<th>Scholarship</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

**Indicate % of funding by**

<table>
<thead>
<tr>
<th>Government</th>
<th>Industry</th>
<th>Other (specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

**Staff Numbers:**

<table>
<thead>
<tr>
<th>Faculty Full Time</th>
<th>Faculty Part Time</th>
<th>Industry, Instructors</th>
<th>Speakers</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
</tr>
</tbody>
</table>

**Industry Impact**

<table>
<thead>
<tr>
<th>Financial Administration</th>
<th>Curriculum Development</th>
<th>Scholarship Opportunities</th>
<th>Industry Liaison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Research (Please tick)**

- Organisational (Applied)
- Engineering (Hard)

**Research Funding**

<table>
<thead>
<tr>
<th>Indicate source &amp; amount (US $)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Describe Nature/objectives of Research**

**Research Facilities (if any)**

- Normal Engineering Laboratories
- Local Construction Industry which is interested in the Construction Program and its work

**Are there any special features of your programme? Please indicate**

- The Construction Program exists in a small but well recognized engineering school which is interested in the construction program and its work.
  - Close connections to the business school
  - A local construction industry that is willing to help
February 17th, 1981.

Study of Construction Programmes

Name of Institution: Clemson University
Faculty/School: Department of Civil Engineering
Address:
Name, Title of Contact: Dr. Herbert W. Bushing, Professor and Head
Name, Title of Respondent:

Programme/s offered
Degree Bachelor Master Ph.D Non-deg. Diploma Certificate Programme Other

Year Programme Established: 1900 1958 1958
Duration (years) - length of Programme: (4 yrs) (1-1/2 to 3 yrs) (yrs)
Enrollment
Current Part Time - - -
Current Full Time 430 30 8
Other (specify) - - -
National - - -
Foreign - - -

Admission Requirements
Adm Office establishes 8 avg. 8 avg.
Course Requirements - list number of courses needed whether thesis or not
128 sem 30 sem Usually
cr hrs cr hrs 45-48+
18 hrs dissertation
Scholarship, Fellowship, Bursaries, etc. available
Yes Yes - graduate stipends of at least $400/no are available

Language of Instruction: English
Total Numbers of Students Graduated:
BSCE 2, Q2, MS 120, PhD 7
National 75
Foreign 25 in grad programs

Staff Members: Totals (Indicate Ph.D's)
Faculty Full Time (18) Part Time (-) Industry,Instructors Speakers (-)

Industry Impact (Please tick)
Financial Administrative (X) Curriculum Development (X)
Scholarship, Bursaries etc. (X) Overseeing Body Industry Liaison (X)

Comments

Course, Title, Descriptions
Indicate Year Title (If any)

Note BSCE degree program attached and list of all CE courses

Educational Programme Objectives:
See attached page

Research (Please tick) Organizational (Applied) (X) Engineering (Hard) ( )

Research Funding (Indicate source & amount (US $)) see attached page

Describe Nature/Objectives of Research: Research directed to applied and basic engineering.
Facilities include structural testing laboratory (including 1,000,000 lb capacity compression machine) and a hydraulics laboratory for physical hydraulic modelling.

Research Facilities (If any)

Are there any special features of your program. Please indicate.

Four specialty areas are defined in graduate level programs - construction, transportation, structural engineering, water resources.
List of Courses in Civil Engineering

CE 201 Surveying 3(2,3)
CE 205 Civil Engineering Computer Applications 3(2,3)
CE 301 Structural Analysis I 3(2,2)
CE 302 Structural Steel Design 3(2,2)
CE 310 Transportation Engineering 4(3,3)
CE 320 Introduction to Construction Materials 3(2,3)
CE 330 Soil Mechanics 3(2,2)
CE 402 Reinforced Concrete Design 3(2,2)
CE 403/404 Use of Computers in Structural Analysis & Design 3(2,2)
CE 404/405 Masonry Structural Design 3(3,0)
CE 410/411 Traffic Engineering: Operations 3(3,0)
CE 412/413 Urban Transportation Planning 3(3,0)
CE 417/418 Airphoto Interpretation 3(2,3)
CE 419/420 General Photogrammetry 3(2,3)
CE 421/422 Hydrology 3(3,0)
CE 424 Introduction to Construction Engineering 3(3,0)
CE 425 Engineering Relations 3(3,0)
CE 431/432 Applied Soil Mechanics 3(2,2)
CE 432/433 Construction Project Administration 3(2,3)
CE 433/434 Construction Planning & Scheduling 3(2,3)
CE 434/435 Construction Estimating and Project Control 3(2,3)
CE 435/436 Engineering Project Analysis 3(2,2)
CE 436/437 Construction Support Operations 3(2,3)
CE 437/438 Construction Equipment Selection and Maintenance 3(2,3)
CE 441/442 Applied Hydraulics 3(3,0)
CE 453/454 Advanced Structural Analysis 3(3,0)
CE 462/463 Coastal Engineering I 3(3,0)
CE 463/464 Coastal Engineering II 3(3,0)
CE 464/465 Physical Models in Fluid Mechanics 3(2,2)
CE 470/471 Probabilistic Design in Civil Engineering 3(3,0)
CE 490/490 Special Projects 1-3(1-3,0)
CE 499 Civil Engineering Design Project 3(2,3)
CE 801 Matrix Methods of Structural Analysis 3(3,0)
CE 802 Prestressed Concrete Analysis and Design 3(3,0)
CE 803 Reinforced Concrete Structural Systems 3(3,0)
CE 804 Theory and Design of Thin Plates 3(3,0)
CE 805 Plastic Analysis and Design of Steel Structures 3(3,0)
CE 806 Metal Compression Members 3(3,0)
CE 807 Numerical and Approximate Methods of Structural Analysis 3(3,0)
CE 808 Finite Element Method in Engineering 3(3,0)
CE 811 Highway Geometric Design 3(2,3)
CE 812 Airphoto Interpretation II 3(2,3)
CE 813 Highway and Airport Pavement Design 3(3,0)

Educational Programme Objectives:

The primary objective of the program is to prepare students for successful professional careers in civil engineering. Preparation for these careers is accomplished through the organized program of formal instruction in the courses noted in this questionnaire. In addition, student backgrounds are enhanced by contact with faculty and practicing engineers, by involvement in student chapter professional society activities, field trips, outside lecturers, and contact with research projects, and a variety of extracurricular activities.

Graduates are encouraged to become registered engineers and to continue their education throughout their professional careers.
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 814</td>
<td>Traffic Flow Theory</td>
<td>3(3.0)</td>
</tr>
<tr>
<td>CE 815</td>
<td>Transportation Safety Engineering</td>
<td>3(3.0)</td>
</tr>
<tr>
<td>CE 816</td>
<td>Highway Planning</td>
<td>3(3.0)</td>
</tr>
<tr>
<td>CE 817</td>
<td>Mass Transit Planning</td>
<td>3(3.0)</td>
</tr>
<tr>
<td>CE 818</td>
<td>Airport Planning and Design</td>
<td>3(3.0)</td>
</tr>
<tr>
<td>CE 819</td>
<td>Transportation Research 2-4</td>
<td></td>
</tr>
<tr>
<td>CE 822</td>
<td>Aggregates as Construction Materials</td>
<td>3(2.3)</td>
</tr>
<tr>
<td>CE 830</td>
<td>Advanced Soil Mechanics</td>
<td>3(3.0)</td>
</tr>
<tr>
<td>CE 831</td>
<td>Foundation Engineering</td>
<td>3(2.3)</td>
</tr>
<tr>
<td>CE 835</td>
<td>Construction Project Modeling and Control</td>
<td>3(2.3)</td>
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<tr>
<td>CE 837</td>
<td>Construction Specifications and Contracts</td>
<td>3(2.3)</td>
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<tr>
<td>CE 840</td>
<td>Construction of Nuclear Power Plants</td>
<td>3(2.3)</td>
</tr>
<tr>
<td>CE 846</td>
<td>Flow in Open Channels</td>
<td>3(3.0)</td>
</tr>
<tr>
<td>CE 861</td>
<td>Mechanics of Sediment Transport</td>
<td>3(2.2)</td>
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<td>CE 862</td>
<td>Heat Transfer at Water Surfaces</td>
<td>3(3.0)</td>
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<tr>
<td>CE 865</td>
<td>Hydrology I</td>
<td>3(3.0)</td>
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<td>CE 866</td>
<td>Hydrology II</td>
<td>3(3.0)</td>
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<td>CE 871</td>
<td>Coastal Hydrodynamics</td>
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<td>CE 872</td>
<td>Marine Pollution Control</td>
<td>2(2.0)</td>
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<tr>
<td>CE 889</td>
<td>Special Problems I 1-3</td>
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<tr>
<td>CE 890</td>
<td>Special Problems II 1-3</td>
<td></td>
</tr>
<tr>
<td>CE 891</td>
<td>Master's Research. Credit to be arranged</td>
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<tr>
<td>CE 901</td>
<td>Theory and Design of Shell Structures</td>
<td>3(3.0)</td>
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<tr>
<td>CE 902</td>
<td>Dynamic Analysis of Structures</td>
<td>3(3.0)</td>
</tr>
<tr>
<td>CE 991</td>
<td>Doctoral Research. Credit to be arranged</td>
<td></td>
</tr>
</tbody>
</table>
Course, Titles, Descriptions
Indicate Test Title (if any)

* Baccalaureate degree program in Construction Management to be initiated Fall Term 1981/82 (September, 1981).

Educational Programme Objectives:

Research (Please tick) 
Organizational (Applied) ( ) Engineering (Hard) ( )

Research Funding (Indicate source & amount (US $)) Research not currently anticipated

Describe Nature/objectives of Research and Research Facilities (if any) None

Are there any special features of your programme. Please indicate.
February 17th, 1981.

Course, Titles, Descriptions
Indicate Text Title (if any)

Construction Management - Text: Halpin and Woodhead-Construction Management
Design of Construction - Halpin and Woodhead-Design of Constructi
Operations
Construction Administration: 
Barrie and Paulson - Professional Construc
C. E. Management I
C. E. Management II

Readings in Cost Engineering - ASCE

Construction Law
Construction Seminar

Special Topics
Computer Applications in Construction

Experimental Statistics
Hines and Montgomery - Probability

and Statistics in Engineering

Operations Research
Paadienbach and George - Intro to OR

Construction Economics

Education Program Objectives:

Graduate Education of Construction Managers

Research (Please tick)
Organisational (Applied) ( ) Engineering (Hard) ( )
Microcomputer Analysis of Construction Operations

Research Funding
(Indicate Source & amount (US $) ) U. S. Navy - $40,000

Describe Nature/objectives of Research
Management Planning and Control

and

Research Facilities (if any)
Several small Microcomputers
At Higher Level a DEC VAX mid- computer

Are there any special features of your program? Please Indicate.

Program relies heavily on Professional Problems or Term Projects carried
out by students in contact with the local Construction and Contracting Community.
Atlanta has a wide range of projects and construction related firms who are very
cooperative in supporting our program. Emphasis is on actual field construction
and site situations.

*Industry Speakers involved in Seminar Course.
February 11th, 1981

Study of Construction Programmes

Name of Institution: Jackson State University

Faculty/School address: School of Industrial and Technical Studies

Name, Title of Contact: Joe King, Head, Industrial Technology Department

Name, Title of Respondent: Joe King, Head, Industrial Technology Department

Programme/s offered: Degree Degree Non-deg. Non-deg. Part of Other Bachelor Master Ph.D. Diploma Certificate Programme Specific

Year Programme Established: 1973

Duration (years) - length of Programme: 8 years

Enrollment:
- Current Part Time: 5
- Current Full Time: 26

Other (specify) of which:
- National: 21
- Foreign: 10

Admission Requirements:
- High School
- ACT or SAT

Course Requirements - list number of courses needed:
- 10

Whether thesis or not:
- Scholarship, Fellowship
- Bursaries, etc. available:
- University scholarship

Language of instruction:

Total Numbers of Students Graduated:

Indicate % of funding by:
- Government
- Industry
- Other (specify)

Staff Members: Totals
- Faculty Full Time: (2)
- Part Time: (3)
- Industry, Instructors: (4)
- Speakers: (5)

Industry Input
- Financial Administrative: (6)
- Curriculum Development: (7)
- Scholarship, Bursaries, etc.: (8)
- Overseeing Body: Industry Liaison: (9)

Comments:

Course, Titles, Descriptions

Indicate Text Title (if any)


2. ITC 300 Mechanical and Electrical Equipment. Prerequisite: Consent of instructor. Basic principles and design of air conditioning, plumbing, electrical system used in building.

3. ITC 303 Introduction to Plumbing. A course designed to acquaint the student with the fundamentals of basic residential and commercial plumbing.


6. ITC 321 Site Planning and Development. Prerequisite: Consent of instructor. The effects of climate, geography, topography, and soil on the design of a building site and the different uses of the site in spacing buildings.

7. ITC 404 Strength of Materials. Prerequisite ITC 205. Problems related to the strength of the different types of building materials will be experienced by the student.

8. ITC 414 Contracts, Specifications, and Law. Prerequisite ITC 205. The preparation of specifications and conditions which forms the contractual relationship between owner and builder.

9. ITC 499 Building Seminar. Prerequisite Consent of instructor. Emphasis will be placed on problem solving as it relates to the different areas where students have found problems.

Educational Programme Objectives:

1. To develop an understanding of procedures and techniques used by tradesmen.

2. To develop ability and skill in a wide variety of construction operations.

3. To provide knowledge in areas related to construction.

Research (Please tick)
- Organizational (Applied) ( ) Engineering (Hard) ( )

Research Funding
- Indicate source & amount (US $)

Describe Nature/objectives of Research

Research Facilities (if any)

- Are there any special features of your programme. Please indicate.
<table>
<thead>
<tr>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.40 Project Management</td>
</tr>
<tr>
<td>1.411J Basic Building Construction</td>
</tr>
<tr>
<td>1.412J Design of Building Systems</td>
</tr>
<tr>
<td>1.413 The Construction of Buildings</td>
</tr>
<tr>
<td>1.431 Project Company Organizations</td>
</tr>
<tr>
<td>1.432 Project Control</td>
</tr>
<tr>
<td>1.441 Modeling of Construction Processes</td>
</tr>
<tr>
<td>1.442 Modeling of Project Management Decisions</td>
</tr>
<tr>
<td>1.451 Construction Labor Economics and Labor Relations</td>
</tr>
<tr>
<td>1.46 Analysis in Real Estate Development</td>
</tr>
<tr>
<td>1.471J Legal Problems in Construction</td>
</tr>
<tr>
<td>1.481 Seminar in Construction Engineering and Management</td>
</tr>
<tr>
<td>1.482 Engineering Risk-Benefit Analysis</td>
</tr>
</tbody>
</table>

**Educational Program Objectives:** Provide graduates with a sound understanding of all aspects of the construction industry and working knowledge of methodological tools applicable to decision-making in this industry.

**Research (Please tick)**

| Organisational (Applied) (X) | Engineering (Hard) (X) |

**Research Funding (Indicate source & amount US $)**

<table>
<thead>
<tr>
<th>U.S. Department of Transportation</th>
<th>$165,000</th>
</tr>
</thead>
</table>

**Describe Nature/objectives of Research and**

| Varied |

**Research Facilities (if any)**

| Variety of computer facilities, time-lapse photographic equipment |

**Are there any special features of your program? Please indicate.**

Research is strongly risk analysis based.
**Study of Construction Programmes**

**Name of Institution:** Memphis State University

**Faculty/School:** Department of Engineering Technology, Memphis, TN 38152

<table>
<thead>
<tr>
<th>Programme(s) Offered</th>
<th>Degree Bachelor</th>
<th>Degree Master</th>
<th>Non-deg. Diploma</th>
<th>Non-deg. Certificate</th>
<th>Other Programme</th>
<th>Specif.</th>
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<td>Course Requirements - list number of courses needed whether thesis or not</td>
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<td>Faculty Full Time (3) Part Time (3) Industry,Instructors Speakers (5)</td>
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<td>Financial Administrative ( ) Curriculum Development ( )</td>
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<td>(Please tick)</td>
<td>Scholarship,Curriculm etc. ( ) Overseas, Body Industry Liaison ( )</td>
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**Comments**
Study of Construction Programmes

Name of Institution: Michigan Technological University

Faculty/School: Department of Civil Engineering

Address: Houghton, Michigan 49931

Name, Title of Contact: Dr. V. B. Mattingly, Department Chairman

Name, Title of Respondent: C. Edwin Balchenoff, Lecturer

Programme/s offered: Bachelor Degree, Master Degree, Non-degree, Non-degree, Part of Other Programme

Year Programme Established: 1969

Duration (years) - length of Programme: 5

Enrollment:
- Current Part Time: 6
- Current Full Time: 5
- Other (specify): 5
- National: 6
- Foreign: 0

Admission Requirements: Bachelor of Science in Civil Engineering

Course Requirements - 11st number of courses needed: 69 Cr.

Scholarship, Fellowship, etc. available: X

Language of Instruction: English

Total Numbers of Students Graduated (No Records Available): Nation: 1, Foreign: 0

Indicate % of funding by Government, Industry, Other (specify): Administration, Scholarship, Research

Staff Numbers: Totals (Indicate #): Note
- Faculty Full Time (2) Part Time ( ) Industry, Instructors (3)
- Note: Financial Administrative ( ) Curriculum Development ( )
- Scholarship, Fellowships etc. ( ) Governing Body Industry Liaison ( )

Research (Please tick): Organisational (Applied) ( ) Engineering (Part) ( )

Research Funding:
Indicate source & amount (US $)

Describe Nature/objectives of Research:

Research Facilities (If any):

Are there any special features of your programme. Please indicate:
- The program is oriented toward the management of construction, but places emphasis on "Construction Management" as a unique project delivery system.
- Both the theory and the practice of CN is covered, including strategy, financial and management control, operations, administration and marketing of services.

Comments:

Note (1): Construction option available to undergraduates.
(2): Program is interdisciplinary with the school of Business Administration.
(3): Varies - no set pattern or number.

Courses, Titles, Descriptions

- CE 432: Project Delivery Systems
- CE 433: Building Construction
- CE 434: Construction Engineering
- CE 450: Civil Engineering I - Project Delivery Systems
- CE 453: Civil Engineering II - Financial and Management Control of Projects
- CE 501: Civil Engineering III - Decision Making - Value Management
- BA 570: Management Theory and Practice
- BA 510: Computer Applications in Business
- BA 524: Management Accounting I
- BA 535: Management Accounting II
- BA 547: Managerial Finance

Foundation Plan:

4 CE Technical Electives (8 CE electives if courses marked * have been taken as undergraduates)
Study of Construction Programme

February 17th, 1981.

Name of Institution: New Mexico State University
Faculty/School: Civil Engineering Dept./College of Engineering

Name, Title of Contact: Conrad G. Kayes, Jr., Prof. & Head
Name, Title of Respondent: Conrad G. Kayes, Jr., Prof. & Head

Programme/s offered:
- Degree: Bachelor, Master, Ph.D.
- Non-deg.: Diploma, Certificate Programme

Year Programme Established: 1958
Duration (years) - length of Programme: 4

Enrollment:
- Current Part Time: 400
- Current Full Time: 27
- Other (specify) of which: 9

Admission Requirements:
- ACT
- GRE

Course Requirements - list of courses needed:
- 46: Thesis
- 10: Non-Thesis

Scholarship, Fellowship, Bursaries, etc. available:

Language of Instruction: English

Total Numbers of Students Graduated:
- Undergraduate: 210
- Masters: 39

Indicate % of funding by:
- Government: 40%
- Industry: 15%
- Individuals (Outside Source): 5%

Staff Numbers: Totals (Indicate #’s):
- Faculty Full Time: 5
- Part Time: 5
- Industry, Instructors: 5
- Speakers: 5

Industry Input:
- Financial Administrative (5)
- Curriculum Development (5)
- Scholarship, Bursaries etc. (5)
- Overseeing Body Industry Liaison (5)

Research Funding (Indicate source & amount (US $)):
- DOE & State of New Mexico – $1,000,000

Course, Titles, Descriptions:
- CE 471 – Highway Engineering – Administration, planning, control, construction, and pavement – Highway Engineering by Oglesby.
- CE 477 – Construction Engineering – Construction planning, equipment, and methods – Construction Planning, Equipment and Methods by Pearcy.
- GE 552 – Site Investigation – Geological factors affecting engineering construction and geological investigation methods and techniques for engineering site selection.

Educational Programme Objectives:
- Designed to provide a broad background in design, construction, and the operation of engineering works. The curriculum is so arranged that students may do specialized work in one or more areas:
- Research (Please tick): Organizational (Applied) ( ), Engineering (Hard) (V)

Describe Nature/objectives of Research:
- Design and Inspection of Campus Geothermal Project. Design and Analysis of Pavement Construction.

Research Facilities (if any):

Are there any special features of your programme. Please indicate:
- New joint AGC student chapter between NAU and UTEP.
- Scholarships in construction amount to $3,000.
Study of Construction Programmes

Name of Institution: NORTH CAROLINA STATE UNIVERSITY

Faculty/School: Department of Civil Engineering

Address: Raleigh, NC 27695, USA

Name, Title of Contact: Prof. S.W. Hunsley

Name, Title of Respondent: None

Programmes Offered

<table>
<thead>
<tr>
<th>Degree</th>
<th>Bachelor</th>
<th>Master</th>
<th>Ph.D.</th>
<th>Diploma</th>
<th>Non-Deg.</th>
<th>Part of Certificate Programmes</th>
<th>Other</th>
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</thead>
<tbody>
<tr>
<td>Year Programme Established</td>
<td>1954</td>
<td>1976</td>
<td>1976</td>
<td>0</td>
<td>0</td>
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<td>Duration (years) - length of Programmes</td>
<td>4</td>
<td>4-6</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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</tbody>
</table>

Enrollment

| Current Part Time | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Current Full Time | 192 | 11 | 0 | 0 | 0 | 0 | 0 |
| Other (specify) of which | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| National | 192 | 11 | 0 | 0 | 0 | 0 | 0 |
| Foreign | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Admission Requirements

| HS | 115 | 115 | 115 | 115 | 115 | 115 | 115 |
| Courses Required - list number of courses needed whether thesis or not | 130 s. hr. | 130 s. hr. | 130 s. hr. | 130 s. hr. | 130 s. hr. | 130 s. hr. | 130 s. hr. |
| Scholarship, Fellowships, etc. available | Limited scholarships & fellowships; teaching and research assistantships |

Language of instruction: English

Total Numbers of Students Graduated

<table>
<thead>
<tr>
<th>National</th>
<th>Foreign</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
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<tr>
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</table>

Indicate % of funding by

<table>
<thead>
<tr>
<th>Administration</th>
<th>Scholarship</th>
<th>Research</th>
</tr>
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<tbody>
<tr>
<td>Government</td>
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<tr>
<td>Industry</td>
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<td>Industry &amp; private</td>
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Staff Numbers: Totals (Indicate %)

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<thead>
<tr>
<th>Faculty Full Time</th>
<th>Part Time</th>
<th>Industry, Instructors</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
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<tr>
<td>Others</td>
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</table>

Industry Input (Please tick)

<table>
<thead>
<tr>
<th>Financial Administrative</th>
<th>Curriculum Development</th>
<th>Scholarship, Fellowships, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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</table>

Course, Titles, Descriptions

Indicate Text Title (if any)

<table>
<thead>
<tr>
<th>Undergraduate</th>
</tr>
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<tbody>
<tr>
<td>Construction Engineering I (Text: CONSTRUCTION METHODS AND MANAGEMENT)</td>
</tr>
<tr>
<td>Construction Engineering II (Text: BUILDING CONSTRUCTION)</td>
</tr>
<tr>
<td>Cost Analysis and Control (Text: CONSTRUCTION PROJECT MANAGEMENT)</td>
</tr>
<tr>
<td>Legal Aspects of Contracting (Text: CONTRACTS, SPECIFICATIONS &amp; LAW FOR ENGRS)</td>
</tr>
<tr>
<td>Construction Engineering Project (no text)</td>
</tr>
<tr>
<td>Other courses common to civil engineering curriculum</td>
</tr>
</tbody>
</table>

Graduate:

| Construction Planning and Scheduling (Text: CONST PERFORMANCE CONTROL BY NETWORK) |
| Construction Productivity (Text: METHODS OF IMPROVING PERFORMANCE FOR CONST MANAGERS) |
| Building Construction Systems (Text: none) |
| Construction Equipment Systems (Text: MANAGING CONSTRUCTION EQUIPMENT) |
| C.E. Project (no text) |
| Plus 2 other courses in major and 3 courses in minor |

Educational Programmes Objectives:

| Develop technically competent, innovative construction engineers and managers |
| Research (Please tick) |
| Organisational (Applied) (x) Engineering (Hard) (x) |

Research Funding

| (Indicate source & amount (US $)) |
| State of NC | $29,000 |
| Industry | $118,000 |

Describe Nature/objectives of Research

| Construction materials, methods, and management |

Research Facilities (if any)

| Laboratories: structural, materials, soils, water; extensive computer facilities, incl. computer graphics; time-lapse photography equipment. |

Are there any special features of your programme? Please indicate.

83 degree "Civil engineering/Construction Option" is ABET-accredited as a construction engineering degree. Graduate students may incorporate courses at Duke Univ. and UNC-Chapel Hill in their program at no additional cost.
Course Title: Civil Engineering Construction

1. CE 431 - Civil Engineering Construction: Estimating the production of major construction equipment, Drilling and blasting of rock, Concrete methods, and Design of forms.


3. CE 470 - Building Construction Management I: Components of building industry, Design and construction contracts, bidding procedures, Project scheduling, Planning and organization.


6. CE 473 - Building Construction Engineering I: Project planning, Supervision, and inspection of architectural and structural operations in major buildings.

7. CE 474 - Building Construction Engineering II: Project planning, Supervision and Inspection of HVAC, electrical and plumbing systems in major buildings.

8. CE 511 - Legal Aspects of Construction: Basic legal doctrines and techniques, Legal and contractual responsibilities of each party, Analysis of a construction contract, Professional practice problems.

9. CE 512 - Powerplant Construction: Planning, engineering, and construction of large projects such as electric powerplants, Regulatory and quality assurance impact, Project control systems, Construction labor considerations.

10. CE 553 - Engineering Construction Management: Organization, Project planning, Scheduling and control, Development of a Construction Management system, Requirements for bonding and insurance.

11. CE 590 - Personal Project Courses I: Construction Labor Relations, Advanced Scheduling Techniques, Statistical Quality Control of Construction Materials, etc.

Educational Program Objectives: The objective of the Master's Degree program is to provide specialized preparation for addressing the difficult technical, managerial, and organizational problems confronted by construction managers on residential, building, heavy and highway projects. The Ph.D. program is designed for those students who desire to prepare for a teaching or research career at the university level or a research career in the construction industry.

Research (Please tick)

Research Funding

1. Industry - $50,000
2. Government - $70,000

Describe Nature/objectives of Research and Research Facilities (if any)

1. Management, Construction and QA/QC Control practices on power plant projects.
2. Statistical Quality Control of batchwise, base course, and embankment materials on construction projects.
5. Legal aspects related to contract administration.
6. Competitive bidding strategy models.
7. Organizational and contract staffing requirements of state transportation departments.

Are there any special features of your program? Please indicate. The program has established excellent contact with the construction industry in Pennsylvania and neighboring states as well as with branches of the federal government. The faculty are active members in the American Society of Civil Engineers and have published widely in the fields of Quality Control, Methods Improvement and Construction Management. A text entitled "Planning, Engineering, and Construction of Electric Generation Facilities" has been written by programme professors Jack H. Witlevensh and B. Randolph Thomas. (Milea Interests)
February 17th, 1981.

Course, Titles, Descriptions
Indicate Text Title (if any)
See attached sheet.

Educational Programme Objectives:
It is our primary objective to educate our students so that they may
gain a competence to obtain challenging and career-oriented jobs in
the construction industry and related fields.

Research (Please tick) Organizational (Applied) ( ) Engineering (Mst) ( )
Research Funding
(Indicate source & amount (US $))

Describe Nature/objectives of Research and
Research Facilities (if any)

Are there any special features of your program? Please indicate.
### OPTION I
CONSTRUCTION ENGINEERING TECHNOLOGY

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<th></th>
<th>First Semester</th>
<th>Second Semester</th>
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<td>College Algebra 113</td>
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<td>Plane Trigonometry 122</td>
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<td>Construction Materials 234</td>
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<td>Construction Methods 235.</td>
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<td>Mechanics of Materials.</td>
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<td>Intro Physics 1 100-130</td>
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<td>Str. Design Steel 632</td>
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### OPTION II
CONSTRUCTION MANAGEMENT

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<thead>
<tr>
<th></th>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRESHMAN</td>
<td></td>
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</tr>
<tr>
<td>English Comp. 101</td>
<td>3</td>
<td>English Comp. 102</td>
</tr>
<tr>
<td>College Algebra 113</td>
<td>3</td>
<td>College Algebra 113</td>
</tr>
<tr>
<td>Economics 200</td>
<td>3</td>
<td>Plane Trigonometry 122</td>
</tr>
<tr>
<td>Humanities.</td>
<td>3</td>
<td>Science Electives</td>
</tr>
<tr>
<td>Const. Materials</td>
<td>15</td>
<td>Approved Elective</td>
</tr>
<tr>
<td></td>
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<tr>
<td>SOPHOMORE</td>
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<tr>
<td>Construction Methods 235.</td>
<td>3</td>
<td>Mechanics of Materials.</td>
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<tr>
<td>Statics 221.</td>
<td>3</td>
<td>Basic Speech 207.</td>
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<tr>
<td>General Psychology 155</td>
<td>3</td>
<td>Humanities</td>
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<td>Approved Electives</td>
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<td>Financial Accounting 201.</td>
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<tr>
<td>JUNIOR</td>
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<tr>
<td>Mechanical Systems 330.</td>
<td>5</td>
<td>Electrical Systems 331</td>
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<tr>
<td>Str. Design Wood 536</td>
<td>4</td>
<td>Building Design II 432</td>
</tr>
<tr>
<td>Residential Design 332</td>
<td>3</td>
<td>Str. Design Steel 632</td>
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<tr>
<td>Construction Surveying 537</td>
<td>3</td>
<td>Computer Elective</td>
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<tr>
<td>Technical Writing</td>
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<td>Approved Elective</td>
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<tr>
<td>SENIOR</td>
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<td>Str. Design Concrete 633</td>
<td>4</td>
<td>Const. Contracts &amp; Spec.</td>
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<td>Working Drawings 534</td>
<td>3</td>
<td>Const. Management</td>
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<tr>
<td>Intro. Indust. Safety 593</td>
<td>3</td>
<td>Fdn. and Soil Mechanics 638</td>
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<tr>
<td>Business Elective.</td>
<td>3</td>
<td>Human Rel. in Ind. Set. 680</td>
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<tr>
<td>Const. Cost &amp; Est. 631</td>
<td>15</td>
<td>Approved Elective</td>
</tr>
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### TWO-YEAR ARCHITECTURAL DRAFTING TECHNOLOGY

<table>
<thead>
<tr>
<th></th>
<th>First Year</th>
<th>Second Year</th>
</tr>
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<tbody>
<tr>
<td>FIRST YEAR</td>
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</tr>
<tr>
<td>Engineering Graphics 1 121</td>
<td>3</td>
<td>Const. Graphics 123</td>
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<tr>
<td>English Comp. 101</td>
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<td>College Algebra</td>
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<tr>
<td>Const. Materials</td>
<td>3</td>
<td>Plane Trig. 122</td>
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<tr>
<td>Elective</td>
<td>15</td>
<td>Intro. to Computer 121</td>
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<td>SECOND YEAR</td>
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<tr>
<td>Bldg. Design 432</td>
<td>3</td>
<td>Working Drawings 534</td>
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<tr>
<td>Const. Surveying 537</td>
<td>3</td>
<td>Const. Cost &amp; Est. 631</td>
</tr>
<tr>
<td>Basic Speech 207.</td>
<td>3</td>
<td>Pictorial Drafting 526</td>
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<td>Mechanical Systems 330</td>
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<td>Electrical Systems</td>
</tr>
<tr>
<td>Elective</td>
<td>17</td>
<td>Elective</td>
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</table>
**Study of Construction Programmes**

**Name of Institution:** PRATT INSTITUTE

**Faculty/School:** CONSTRUCTION MANAGEMENT

**Address:** HUBBING HALL, BROOKLYN, NEW YORK 11205

**Name, Title of Contact:** WALTER STREETMAN, CHAIRMAN

<table>
<thead>
<tr>
<th>Programme(s) offered</th>
<th>Degree</th>
<th>Bachelor</th>
<th>Master</th>
<th>Dr.</th>
<th>Diploma</th>
<th>Certificate</th>
<th>Programme</th>
<th>Specified</th>
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<tbody>
<tr>
<td><strong>CONSTRUCTION MANAG</strong></td>
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<tr>
<td>Year Programme Established</td>
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<td></td>
<td></td>
<td></td>
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<td>Duration (years) - length of Programme</td>
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<td>Enrollment</td>
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<td></td>
<td></td>
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<tr>
<td>Other (specify) of which</td>
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</tr>
<tr>
<td>Foreign</td>
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<td></td>
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</tr>
</tbody>
</table>

**Admission Requirements:** SATISFACTORY HIGH SCHOOL DIPLOMA OR EQUAL.

**Course Requirements - List number of courses needed whether thesis or not:**

**Scholarship, Fellowship, Awards, etc. Available:**

**Language of Instruction:** BROOKLYNSE ENGLISH

<table>
<thead>
<tr>
<th>Total Numbers of Students Graduated</th>
<th>National</th>
<th>544</th>
<th>Foreign</th>
<th>55</th>
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</thead>
<tbody>
<tr>
<td>Administration</td>
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<tr>
<td>Scholarship</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Research</td>
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**Indicate % of funding by:**

<table>
<thead>
<tr>
<th>Other (specify)</th>
<th>100 (PRIVATE)</th>
<th>90 (PRIVATE)</th>
<th>0</th>
</tr>
</thead>
</table>

**Staff Numbers: Totals (Indicate #)**

| Faculty Full Time (#) | 9 |
| Part Time (#) | 7 |
| Industry, Instructors | | |
| Speakers | | 12 |

**Industry Input (Please tick):**

- [ ] Financial
- [ ] Administrative
- [ ] Curriculum Development
- [ ] Scholarship, Bursaries etc.
- [ ] Overseeing Body Industry Liaison

**Comments:**

- [ ] Our unique feature of Pratt's Construction Management program is that it is the only one in this area that is offered in this university.
Study of Construction Programmes

Name of Institution: Purdue University School of Engineering and Technology at Indianapolis
Department of Construction Technology

Address: 799 West Michigan St., Indianapolis, IN 46202

Name, Title of Contact: Professor Glenn A. Brackney, Chairperson

Programme's offered: Degree Bachelor, Master, Ph.D, Non-deg. Diploma, Non-deg. Certificate, Programme Specific

Year Programme Established: 1968
Duration (years) - length of Programme: 4 years

Enrollment:
Current Part Time: 160 (12 semester credit hours or less)
Current Full Time: 110
Other (specify): Full time equivalent (FTE) 195
National: 265
Foreign: 5

Admission Requirements:
High school graduate with 6 semesters English, 2 semesters algebra, 2 semesters geometry and two semesters laboratory science.

Course Requirements - list number of courses needed whether thesis or not:
Minimum of forty-four courses requiring 133 semester credit hours of work.

Scholarship, Fellowship, Bursaries, etc. available:
Some scholarships available.

Language of Instruction:
English: AAS 337 AAS 5
BS 227 BS 3

Total Numbers of Students Graduated:
(Fall 1968 to spring - 1980)
National: Government 672 (State of Indiana)
Administration 46 ( ) Scholarship ( ) Research ( )
Industry ( ) Other ( )

Research Funding (Indicate source & amount (US $)):
Source: None

Research Facilities (if any):
Soils laboratory, materials test laboratory, structural test laboratory.

Course, Titles, Descriptions:
Indicate Text Title (if any):
See attached sheet for the two programs of study granting the B.S. degree in Construction Technology.

Describe Nature/objectives of Research:
Would like to have research for improving productivity in the construction industry.

Research (Please tick)
Organisational (Applied) ( ) Engineering (Hard) ( )

Are there any special features of your programme. Please indicate:
The Department of Construction Technology offers two year programs in Architectural Technology and Civil Engineering Technology granting the Associates in Applied Science (AAS). These are Architectural Technology, Civil Engineering Technology and Construction Technology.

The Department of Construction Technology offers two year programs in Architectural Technology and Civil Engineering Technology granting the Associates in Applied Science (AAS). These are Architectural Technology, Civil Engineering Technology and Construction Technology.

Notes: The Department of Construction Technology does not have maximum enrollment for resident, non-resident or foreign students.
The 1981 Construction Management Programme builds on the carefully considered shift in emphasis introduced last year. Then we offered elective courses to strengthen the programme's appeal to all sectors of the industry without diluting the core of the curriculum. This new dimension to the CMP proved extremely successful and in 1981 it will again be possible for delegates involved in other areas of resource management to obtain specialist instruction in their particular area of interest. As always basic disciplines provide the academic base for the programme and lead into pragmatic industry-oriented courses which stress the application of both techniques and concepts in the dynamic construction environment.

The maturity of the programme is further reflected in the fact that every member of this year's teaching team has had experience on previous CMP’s. Professor Boyd Paulson will again visit, continuing our long established links with the Construction Faculty at Stanford University. Mr Peter Thompson from the Project Management Group at the University of Manchester Institute of Science and Technology will be visiting South Africa for a third time.

Over sixty different firms have sponsored delegates to attend the programme and each year the mix of organisations represented includes both small and large contractors as well as clients and consultants. We believe that the CMP provides a unique opportunity for all parties involved in the construction process to meet in a stimulating non-competitive atmosphere to learn from each other and to discuss problems of mutual interest. We, as well as the industry, are the beneficiaries.

PROFESSOR JOHN SIMPSON
Director

The Construction Management Programme is an intensive six week executive programme which has been designed:

a To provide professional management education to experienced managers active in the construction industry so that their technical expertise will be extended to cope with their changing responsibilities.

b To provide an opportunity for managers drawn from all sectors of the industry to meet and share valuable knowledge, in order to gain fresh perspectives over a wide area of management experience.

c The curriculum has been designed to incorporate a number of elective courses in specialist areas and as such, it has definite practical appeal to clients, consulting engineers, contractors and project managers.

The Construction Management Programme will run at the Graduate School of Business, University of Cape Town from July 19 to August 28, 1981. Delegates will be required to live in residence.

Delegates attending the programme will have had substantial management experience within the industry and will carry a corresponding level of responsibility. The programme is on post graduate standard and a degree is desirable though not essential. Delegates should be nominated by their employers.
Instruction

Areas of

FINANCIAL MANAGEMENT

The course examines techniques for economic decision-making in the selection of appropriate projects, methods and processes. Emphasis is given to understanding of time and resources of value and waste, cost and benefits, cost and profit, profit and interest. Techniques for the analysis of financial statements and economic evaluations are developed.

(10%)

PROJECT PLANNING AND CONTROL

The course deals with the concept of planning and control of construction projects. The course covers the concepts of project planning, control techniques, and methods of project management. Special emphasis is given to the development of project control systems and the use of computerized project control systems.

(10%)

CONSTRUCTION TECHNOLOGY

This course introduces the students to the field of construction technology, including building materials, construction methods, and construction practices. The course also covers the principles of construction, including the design, planning, and construction of buildings.

(10%)

CONTRACT LAW

The course introduces the students to the legal aspects of construction, including the concepts of contract law, construction law, and the legal implications of construction projects. The course also covers the principles of contract law, including the formation of contracts, the enforceability of contracts, and the termination of contracts.

(10%)

CONTRACT STRATEGY

The course introduces the students to the strategic aspects of construction, including the development of construction strategies, the management of construction projects, and the evaluation of construction projects. The course also covers the principles of project management, including the development of project plans, the execution of project plans, and the evaluation of project plans.

(10%)

DOCUMENTATION AND DISPUTES

The course introduces the students to the documentation and dispute resolution aspects of construction, including the preparation and interpretation of construction documents. The course also covers the principles of dispute resolution, including the resolution of construction disputes and the management of construction disputes.

(10%)

OPERATIONS ANALYSIS

This course introduces the students to the analysis of operations, including the development of operational models, the evaluation of operational models, and the use of operational models in construction projects. The course also covers the principles of operations analysis, including the development of operational models, the evaluation of operational models, and the use of operational models in construction projects.

(5%)

PROJECT MANAGEMENT

The course introduces the students to the principles of project management, including the development of project plans, the execution of project plans, and the evaluation of project plans. The course also covers the principles of project management, including the development of project plans, the execution of project plans, and the evaluation of project plans.

(5%)

THE HUMAN FACTOR

Human relations within the construction process are becoming increasingly important. The course provides students with skills in managing and communicating with both individuals and groups.

(5%)

BASIC DISCIPLINES

FINANCIAL MANAGEMENT

The course reviews the basics of accounting systems as they relate to the construction and management of projects. An understanding of the basics of accounting and key areas of financial statements is developed.

(5%)

INDUSTRIAL RELATIONS

The course reviews South Africa's industrial relations system, analyses sources of conflict in a company, and presents strategies through which communication and conflict reduction can be achieved and resolved.

(5%)

BUSINESS PLANNING AND CONTROL

The course addresses the problems associated with long-term planning and budgeting in a changing environment. Techniques for the design and implementation of strategies and models necessary in managing organizational resources are studied. Some of the motivational aspects of control are introduced.

(10%)

MARKETING

The marketing concept has applications in the construction environment. The course defines the role of marketing and describes the elements of a marketing mix for construction and professional services.

(5%)

APPLICATIONS

FINANCIAL MANAGEMENT

The course reviews the basics of accounting systems as they relate to the construction and management of projects. An understanding of the basics of accounting and key areas of financial statements is developed.

(5%)

MARKETING

The marketing concept has applications in the construction environment. The course defines the role of marketing and describes the elements of a marketing mix for construction and professional services.

(5%)

EQUIPMENT MANAGEMENT

The course deals with the management of equipment and machinery. It reviews the principles of equipment management and introduces students to the use of equipment information systems.

(5%)

SPECIAL ELECTIVES

PROJECT EVALUATION

The course provides an overview of the field of project management, including the principles of project management and the use of project management tools and techniques. The course also covers the principles of project management, including the development of project plans, the execution of project plans, and the evaluation of project plans.

(5%)

PROJECT PLANNING AND CONTROL

Numerous techniques for the control of time, cost, and quality in construction have been developed and applied. The course presents the student with an overview of these techniques and their applications. The student is encouraged to develop a unique approach to the use of specific project control systems.

(5%)

DOCUMENTATION AND DISPUTES

The course introduces the principles of constructing documentation and the resolution of construction disputes. The course also covers the principles of dispute resolution, including the resolution of construction disputes and the management of construction disputes.

(5%)

NOTE: The figures in parentheses indicate the percentage of total time spent on each topic.
Study of Construction Programmes

Name of Institution: Southwest Missouri State University

Faculty/School: Industrial Education & Technology Department

Address: 901 South National Springfield, MO 65802

Name, Title of Contact: Dr. Charles McKenna

Name, Title of Respondent: Professor of Industrial Education & Technology

Program/s offered: Degree Degree Degree Non-deg. Non-deg. Part of Other Bachelor Master Ph.D. Diploma Certificate Programme Specific

Year Programme Established: 4 yr. B.S. Degree

Duration (years) - length of Programme: Sci. 2 yr.

Enrollment:
Current Part Time: 57
Current Full Time: 5

Other (Specify) of which:
National: 98%
Foreign: 2%

Admission Requirements:
High School Diploma

Course Requirements - list 64 semester hours, major 15 semester hrs., minor 124 sem hr. total number of courses needed whether thesis or not

Scholarship, Fellowship, etc., Available (Specify 5 Private Scholarships and Regents scholarships

Language of Instruction:
English

Total Number of Students Graduated:
National
Foreign

Indicate % of funding by:
Government
Industry
Other (Specify)

Staff Numbers: Totals (Indicate #’s)
Faculty Full Time (6) Part Time (3) Industry, Instructors (1)
Speakers

Industry Input (Indicate #’s)
Financial Administration (0) Curriculum Development (0)
Scholarship, Fellowships etc. (0) Overseeing Body Industry Liaison (1)

Comments

Course, Titles, Descriptions

Indicate Test, Title (if any)

IED 190 Introduction to Construction, Construction Materials, Methods, Careers

IED 390 Building Cost and Estimating, Building Estimator’s Reference Book

IED 391 Advanced Construction Practices, Principles and Practices of Heavy Construction

IED 392 Internship, No test required

MTS 175 Plane Surveying

GEO 110 & 111 Physical Geology Lecture and Laboratory

IED 356 Industrial Supervision, What Every Supervisor Should Know

337 Materials Testing, Technology of Industrial Materials

372 Building Construction Practices, Construction Materials, Methods, Careers

110 Architectural, Mechanical Systems, Mechanical and Electrical Systems in Construction and Architecture

252 Industrial Processes and Materials, Materials and Processes in Manufacturing

250 Industrial Safety, Accident Prevention Manual for Industrial Operations

214 Commercial Architectural Design, Structural Designing for Technicians

210 Architectural Drafting, Architectural Residential Drawing and Design

150 Introduction to Manufacturing Management, Organization for Production

141 Applied Electricity, Industrial Electricity & Student Guide

132 Welding 1, Modern Welding

121 Woods, Machines, and Processes, Woodworking for Industry & Student Guide

110 Technical Drafting, Engineering Drafting & Graphic Technology

Educational Program Objectives:

To provide students with the basic technical knowledge and managerial skills necessary for an entry level mid-management position in the construction industry.

Research (Please tick) Organisational (Applied) ( ) Engineering (Hard) ( )

Research Funding
(Indicate source & amount (US $))

NA

Describe Nature/-objectives of Research and

Research Facilities (if any)

NA

Are there any special features of your programme? Please indicate.

Internship available
CIB - WAS
Study of Construction Programmes

February 17th, 1981.

Name of Institution: University of Florida

Faculty/School:

Address: Department of Civil Engineering

Name, Title of Contact:

Name, Title of Respondent:

Programmes offered:

Degree Bachelor Master Ph.D. Diploma Non-deg. Certificate Programme

Year Programme Established:
1963

Duration (years) - length of Programme:
1971

Enrolment:

Current Part Time:

Current Full Time:

Other (specify) of which:

National:

Foreign:

Admission Requirements:

Maximum students:

Course Requirements - list number of courses needed:

Whether thesis or not:

Scholarship, Fellowship, Bursaries, etc. available:

Language of Instruction:

Total numbers of students graduated:

Indicate % of funding by:

Government:

Industry:

Other (specify):

Research (Please tick):

Organizational (Applied) ( ) Engineering (Hard) ( )

Research Funding:

(Indicate source & amount (US $))

Describe nature/objectives of research and:

Research Facilities (if any):

Are there any special features of your programme. Please indicate.

Comments:

Course, Titles, Description, Indicate wet title (if any)
CHM 6520—Chemical Physics (3) Interatomic and intermolecular forces, energy transfer and reaction in molecular collision processes. Computational aspects of scattering theory.

CHM 6530—Special Topics in Physical Chemistry (1-3; max 12) Lectures or conferences covering selected topics of current interest in physical chemistry.

CHM 6590—Physical Chemistry Seminar (1) Attendance required of graduate majors in physical chemistry. Prereq: graduate course in physical chemistry. Presentation of one seminar. S/U option.

CHM 6620—Advanced Inorganic Chemistry (3) The crystalline state, acid-base, nonaqueous solvent, inorganic mechanisms.

CHM 6622C—Inorganic Preparations (4) Lectures and laboratory experiments showing the reactions and techniques used in the synthesis of inorganic compounds.

CHM 6623—Chemistry of the Metals (3) Prereq: CHM 6471, 6730. Relation of properties to atomic, molecular, and crystal structures.

CHM 6624—Chemistry of the Nonmetals (3) Prereq: CHM 6730. Relations of properties to atomic, molecular and crystal structures.

CHM 6630—Special Topics in Inorganic Chemistry (1-3; max 12) Lectures or conferences on selected topics of current research in inorganic chemistry.

CHM 6690—Inorganic Chemistry Seminar (1) Attendance required of graduate majors in inorganic chemistry. Prereq: graduate course in inorganic chemistry. Presentation of one seminar. May be repeated for credit. S/U option.

CHM 6710—Applied Molecular Spectroscopy (3) Applications and comparison of methods in analysis and molecular structure determination.

CHM 6720—Chemical Dynamics (3) Basic concepts of rate laws, collision theory, and transition state theory; an introduction to reaction dynamics, structural dynamics, and quantitative structure-reactivity correlations.

CHM 6730—Chemical Transformations (3) Important types of chemical reactions and their application to organic and inorganic synthesis.


CHM 6910—Supervised Research (1-5)

CHM 6935—Chemistry Colloquium (1; max 7) Topics presented by visiting scientists and local staff members. S/U.

CHM 6940—Supervised Teaching (1-5)

CHM 7000—Research for Doctor's Thesis (1-15)

CHM 7485—Special Topics in Theories of Atomic and Molecular Structure (1-3; max 9) Prereq: CHM 6482 or PHYS 6226, or equivalent. Mathematical techniques used in atomic, molecular, and solid-state theory. The one-electron approximation and the general quantum-mechanical many-body problem. Selected advanced topics.

CHM 7480—Research for Doctoral Dissertation (1-15)

CHS 5110—Radiochemistry (2) Prereq: CHM 3401 or CHM 4412 or consent of instructor. Properties of radioactive nuclei, nature of radioactive decay, nuclear reactions, interaction of radiation with matter, chemical aspects of radioactivity, and applications of radiochemistry to biology.

CHS 5110L—Radiochemistry Laboratory (1) Prereq: CHM 3120C and 3401 or 4412, or consent of instructor. Radioactivity detection, radiographic separations and analyses, radiochemistry laboratory techniques, the practice of radiological safety, and tracer applications of radioisotopes in chemistry and other fields.

CHS 6120—Nuclear Chemistry (3) Prereq: CHS 5110. Radioactivity, nuclear structure, decay processes, nuclear reactions.

CIVIL ENGINEERING

College of Engineering

GRADUATE FACULTY 1990-91


The following graduate degrees are offered to prepare qualified students for the professional practice of civil engineering: Master of Engineering, Master of Science, Engineer, and Doctor of Philosophy. All degree programs include areas of concentration in the specialties of construction, geotechnical engineering, hydraulics, structures, and transportation engineering. All degrees except the Ph.D. are available in a thesis or nonthesis program.

Resident graduate students are required to register for a minimum of two credits at one credit per semester for ECI 6936. This credit is not applicable to the requirement for any degree. Nonthesis degree students must successfully complete a report of substantial engineering content for a minimum of two hours credit in ECI 6974. Minor or supporting work is encouraged for a variety of related or allied fields of study.


CES 5325—Design of Highway Bridges (3) Prereq: CES 4067, 5726. Analysis by influence lines, slab and girder bridges, composite design, prestressed concrete, continuity, arch bridges, design details, highway specifications.

CES 5607—Behavior of Steel Structures (3) Prereq: CES 4607. Plastic analysis and design of beams and frames. Buckling and stability problems. Connections.

CES 5726—Design of Concrete Systems (3) Prereq: CES 4705. Strength design of members and frames, torsion, two-way slabs, design of building systems, prestressed concrete.


CES 6108—Advanced Structural Analysis I (4) Prereq: CES 4607, 4705. Traditional methods of analyses for forces and deformations; modern matrix methods including direct stiffness method.


CES 6713—Advanced Prestressed Concrete (2) Prereq: CES 4704, 5726. Continuity in prestressed concrete; design of connections, post-tensioning applications, segmental construction. Concrete precasting. Research topics.

ECI 5124—Civil Engineering Systems (3) Civil engineering applications of operations research techniques, models of scheduling, linear programming, queueing theory, and simulation.
ECI 5125—Construction Equipment and Procedures (2) Prereq: ECI 4145 or consent of instructor. Design and optimization of equipment systems for heavy construction.

ECI 5147—Construction Planning and Scheduling (2) Prereq: ECI 4145. Planning, scheduling, organizing and control of civil engineering projects with CPM and PERT. Application of optimization techniques.

ECI 5157—Value Engineering Theory (3) Value engineering concepts, function analysis system techniques (FAST), diagramming, creativity, matrix evaluation, design-to-cost, life cycle costing, human relations and strategies for organizing, performing and implementing value engineering work.

ECI 5158—Civil Engineering Feasibility Analysis (3) Prereq: ECI 4137 or equivalent studies in time-value of money. Theory and practice of feasibility studies for proposed civil engineering projects and other related areas of interest.

ECI 5164—Legal Aspects of Civil Engineering (3) Engineer's view of contracts for design and construction, Legislation and policy affecting labor-management relationships in construction.

ECI 5186—Public Works Planning (3) Functional approach to planning and implementing public works for urban areas. Examines public works needs of residential, commercial, industrial and other land uses.


ECI 5265—Hydraulics Machinery (2) Prereq: ECI 4214 or consent of instructor. Selection and operation of hydraulic motors, pumps and transmissions. Specific speed. Cavitation. Surge tanks.

ECI 5285—Foundation Design (3) Prereq: CES 4705, ECI 4305 or consent of instructor. Investigations, bearing capacity, and the analysis and design of shallow footings, walls, and deep foundations.

ECI 5335—In-Situ Measurement of Soil Properties (3) Prereq: ECI 4305, 4314 or consent of instructor. Methods of soil exploration: techniques of soil sampling and in situ testing. Emphasis on field work and demonstrations.

ECI 5355—Earth and Rockfill Dams (2) Prereq: ECI 4305. Design requirements, construction techniques, compaction control, soil testing and sampling, foundation preparation, and field instrumentation.

ECI 5377—Experimental Determination of Soil Properties I (3) Prereq: ECI 4305. Advanced laboratory determination of engineering properties of soils; hydrometer analysis, controlled rate of consolidation, soil suction, permeability, and triaxial testing.

ECI 5577—Remote Sensing Methods and Engineering Applications (3) Prereq: TTE 4104. Introduction into remote sensing and imaging systems, including engineering applications and digital processing techniques for image analysis. Emphasis on use of LANDSAT imagery and aerial photography for engineering applications.


ECI 6045—Computer Applications in Geotechnical Engineering (3) Prereq: ECI 4341, 6316 or consent of instructor. Application of computer solutions to geotechnical engineering problems.

ECI 6153—Civil Engineering Practice (2-4; max 4) Prereq: graduate status. Problems and case histories of civil engineering projects including social, legal, environmental, and technical aspects.

ECI 6154—Civil Engineering Operations (2-4; max 4) Prereq: graduate status. Application of quantitative methods of decision making to major civil engineering problem areas.

ECI 6223—Numerical Models in Hydraulics (3) Prereq: ECI 4214 or consent of instructor. Application of numerical methods to hydraulic engineering problems, dispersion, porous media flow, river and estuarine mechanics, thermal diffusion.

ECI 6227—Diffusive and Dispersive Transport (2) Prereq: ECI 4214 or consent of instructor. Analytical and numerical solutions to diffusive and dispersive transport processes in flowing water. Fick's law.

ECI 6228—Hydraulic Laboratory and Field Practice (3) Prereq: ECI 4214 or consent of instructor. Hydraulic model laws and their use in undistorted and distorted models with movable or fixed beds. Instrumentation. Data acquisition system.

ECI 6233—Sediment Transport II (2) Prereq: ECI 6237 or consent of instructor. Review of fundamental laws of erosion, sediment transport, river morphology. Movable bed hydraulic models.

ECI 6235—Hydraulics of Stratified Flow (2) Prereq: ECI 5235 or consent of instructor. Uniform and nonuniform flows in multilayered systems. Oscillatory motion and interfacial mixing.

ECI 6237—Sediment Transport I (2) Prereq: ECI 5235 or consent of instructor. Sediment properties. Scour initiation. In-
oriented report suitable for the requirements of the Master of Engineering or Engineer degree. Two credits only are applicable toward the requirements of each degree.

ECI 7980—Research for Doctoral Dissertation (1-15)

ENV 5625—Water Resources Engineering Design (3) Prereq: ECI 4214 or consent of instructor. Design oriented courses based on methods developed in ECI 4214. Introduction to water resources systems and management.

TTE 5006—Transportation Systems Planning (4) Prereq: graduate standing or consent of instructor. Analytical techniques for estimating future travel demands, planning, transportation facilities and locations. Review of transportation technology and future systems.

TTE 5105—Pavement Design (2) Prereq: TTE 4104 or consent of instructor. Design of flexible and concrete pavements.

TTE 5256—Traffic Engineering (4) Prereq: TTE 4007 or equivalent. Traffic studies, operations, flow, signals, signs and markings; regulation of traffic, pedestrian and bicycle operations, parking lot operations, highway lighting.

TTE 5701—Geometric Design of Transportation Facilities (3) Prereq: TTE 4104 or consent of instructor. Geometric design criteria and controls of highways and intersections.

TTE 6102—Highway Stabilization (2) Prereq: graduate standing or consent of instructor. Highway soil stabilization, methods of stabilization and behavior of materials.

TTE 6107—Highway Safety Analysis (2) Prereq: consent of instructor. Accident reconstruction, accident causation and reduction.

TTE 6257—Traffic Control Systems (4) Prereq: TTE 5256. Traffic control system, computer controlled signal systems, modeling of traffic operation systems, system selection implementation and management.

TTE 6267—Traffic Flow Theory (3) Prereq: TTE 5256. Operational techniques to optimize traffic flow including control of traffic, pedestrian and bicycle operations.

TTE 6307—Freeway Design and Operations (3) Prereq: TTE 5256. Operation of freeway systems. Effects of design, advanced analysis techniques, freeway optimization techniques.

TTE 6516—Transportation Planning Decisions (2) Prereq: ECI 4127 or equivalent. Decisions on public investment analysis methods, cost-benefit and delphi techniques, identification and assessment of physical, social, and economic impacts of transportation alternatives, costs of vehicle operations, accidents, value of time, safety, other factors.

TTE 6526—Airport Planning and Operations (2) Prereq: TTE 6257. Location, configuration, air connections, ground, bag-gage, and freight movements; air passenger transfers; aircraft delay analysis; airport access; parking needs; simulation of operations, flight scheduling, and control.

TTE 6606—Urban Transportation Models (4) Prereq: TTE 5006, ECI 4041 or consent of instructor. Calibration and application of UTPS computer models for urban transportation planning; land use and urban activity models for forecasting and allocation.

CLASSICS

College of Liberal Arts and Sciences

GRADUATE FACULTY 1980-81

The department offers a program leading to the Master of Arts with a major in Latin, which may be combined with a minor in Greek, history, or philosophy.

LAT 6900—History of the Latin Language (3)

LNN 5905—Special Study in Latin (3)

LNN 6002—Special Study in Latin Literature (3; max: 9) Sample topics: Horace, Juvenal, Roman comedy, Roman history.

LNN 6905—Individual Work (2-4; max: 10) Readings, conferences and reports. Subjects in language, literature, and civilization for which there are no special course offerings.

LNN 6910—Supervised Research (1-5)

LNN 6940—Supervised Teaching (1-5)

LNN 6971—Research for Master's Thesis (1-15)

CLINICAL PSYCHOLOGY

College of Health Related Professions

GRADUATE FACULTY 1980-81
Chairman: N. W. Perry, Jr. Graduate Coordinator; H. Davis. Professors: B. Barger; E. Cohen; L. D. Cohen; G. Davis; J. R. Goldstein; K. M. Heilman; H. Hollower (Emeritus); F. D. McCaffrey; S. W. L. McLeod; B. G. Melamed; M. E. Meyer; N. W. Perry, Jr.; A. S. Schumacher (Emeritus). Associate Professors: C. D. Belar; R. K. Blashfield; M. K. Goldstein; R. K. Hornberger; J. H. Johnson; W. J. Rice; V. D. Van De Riet. Assistant Professors: D. Bowes; E. B. Fennell; S. Johnson; M. H. McCaulley; J. Tucker; R. E. Vuchinich.

The Department of Clinical Psychology is a graduate program department in the College of Health Related Professions. The department's programs are its predoctoral clinical psychology program leading to the Ph.D. degree in psychology; the Psychology Clinic, a teaching and service unit of the J. Hillis Miller Health Center's Teaching Hospital and Clinics; a predoctoral internship program, and postdoctoral studies and research. The master's degree is offered as part of the doctoral program studies.

The clinical psychology program involves academic ties with other colleges and departments within the University and with the Veteran's Administration training and service programs.

Courses offered by the faculty of the department are listed below. Progress of the program is determined by departmental policies which are consistent with American Psychological Association accreditation standards.

Admission to the department is through appropriate application to the department's admissions committee. A bachelor's degree, along with the undergraduate course in both experimental psychology and statistics and courses in at least three of the following areas: developmental, learning, perception, personality, physiological and social, is generally adequate preparation for graduate admission.

CLP 6375—Introduction to Clinical Psychology (3) Prereq: admission to CLP program or consent of instructor. Current dynamic and personality theories, practices, and related research in psychotherapy.

CLP 6407—Psychological Treatment I (3) Prereq: admission to CLP program or consent of instructor. Current dynamic and personality theories, practices, and related research in psychotherapy.

CLP 6417—Psychological Treatment II (4) Prereq: admission to CLP program or consent of instructor. Current behavioral theories, practices, and related research.

CLP 6437—Behavioral Assessment (3) Prereq: admission to CLP program or consent of instructor. Research, theory, and basic procedures including observational and interview techniques.

CLP 6441—Intellectual Assessment (3) Prereq: admission to CLP program or consent of instructor. Research, theory, and basic procedures including objective and projective techniques.

CLP 6449—Life History Research in Psychopathology (3) Prereq: CLP 6497 or consent of instructor. Recent and longitudinal developments in life history approaches to psychopathology and related behavioral disorders.
C18 - W55
February 17th, 1981.
Study of Construction Programmes

Name of Institution: University of Illinois at Urbana-Champaign

Faculty/School: Department of Civil Engineering
Address: 208 North Fourteenth Street
Urbana, Ill. 61801

Name, Title of Contact: John W. Helin, Professor of Civil Engineering
Name, Title of Respondent: John W. Helin, Professor of Civil Engineering

Programmes offered

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COURSES, TITLES, DESCRIPTIONS:

CE 216 - Construction Engineering. Introduction to the construction processes: contracts and bonding, planning and scheduling, estimating and project control, scientific productivity models and construction economics.

CE 315 - Construction Productivity. Introduction to the application of scientific principles to the measurement and forecasting of productivity in construction engineering; conceptual and mathematical formulations of the labor, equipment, and material factors affecting productivity.

CE 316 - Construction Planning and Control. Project definition; scheduling and control of material, labor, and equipment allocation; optimal schedules; project organization documentation and reporting system; and management and control.

CE 318 - Construction Cost Analysis and Estimating. Introduction to the application of scientific principles to costs and estimates of costs in construction engineering concepts and statistical measurements of the factors involved in direct costs, general overhead costs, cost markups and profits; and the fundamentals of cost recording construction cost accounts and cost controls.

CE 416 - Systems Analysis, I: Systems Methodology and Network Techniques. Basic concepts theories, and techniques of systems analysis, including modeling of large scale systems, forecasting, planning, control and information handling; emphasizes the modeling of systems with network techniques, including distance, flow and project networks; and discusses advanced network topics such as out-of-kilter algorithms in project resource analysis.

CE 417 - Systems Analysis, II: Digital Simulation. Application of simulation techniques to systems analysis; includes modeling for simulation, design of simulation experiments, random number generation, process generation, simulation of queueing system inventory systems, and project networks; analysis of simulation results and some digital simulation languages and programs in use, such as GASP II and C ERTS III.

EDUCATIONAL PROGRAM OBJECTIVES:

The basic objective of our program is educating civil engineering students for careers in project management. The program equips the student with theory and methodology of engineering and management, and conveys a deeper understanding of these tools in a professional working environment. The program attempts to simulate the professional environment using team projects on real structures. The students gather experience in organizing and interacting with their peers to achieve common goals on real projects, providing an extra dimension in learning which complements and reinforces the basic theoretical course content.

RESEARCH

Organizational (Applied) (x) Engineering (Hard) (x)

RESEARCH FUNDING:

NATURE/OBJECTIVES OF RESEARCH:

Analysis of Standards. This research involved the application of systematic analyses of decision tables and information networks to the provisions of standards, codes, and specifications. The analysis provides measures of the internal consistency, clarity, and completeness of a standard.

Fair and Reasonable Markup. In the construction industry, at the project level, markup traditionally has been computed as a percentage of the estimated total cost. This practice has led many to become "equal markup" contractors, or to use their subjective judgment in deciding what markup to use for a particular project. This research investigates a return on investment approach in determination of a fair and reasonable markup.
The Communication Process in the Construction Industry. The purpose of this study is to examine and analyze the communication process within a construction company. A broad scheme of the context of communication, corresponding types of communication within each context, and primary influences on communication at each level is being investigated. Concentration is on the variables within the categories—communication, individual, and organization. The objective is to find means of improving communications and thus increase productivity in the construction industry.

An Approach to the Construction Equipment Policy. This research attempts to solve the utilization and acquisition problems in construction equipment management. A model is being developed to simulate the equipment cost and will be combined in the utilization policy-making. The relationship between acquisition and utilization policies will be investigated and the results used in the acquisition policy-making. A guideline for implementation of the approach is to be presented.

Risk Sharing in Construction Contracts. This study investigates the cost effects of varying the assignment of risks between owners and contractors in firm fixed-price construction contracts. Among the topics included are a risk classification system, techniques for contractually assigning risk, the applicability of utility theory for analyzing the assignment of risk in construction, modeling the cost effects of varying the assignment of risk, and implementation considerations.

RESEARCH FACILITIES:
Extensive computer and laboratory facilities.

SPECIAL FEATURES OF THE PROGRAM:
One of the special features of our program is construction movies which are shown each week. They give the student a chance to visit many sites all over the world and see construction in action.
Field trips to the offices of prominent design/contractor organizations, in Chicago. Also, to construction sites such as a nearby nuclear power plant.
Strong participation in and support of the student ASCE and AGC Chapters.
Name of Institution: University of Michigan
Faculty/School: Construction Engineering and Management
Address: Ann Arbor, Michigan 48109

Name, Title of Contact: Professor Robert B. Harris
Name, Title of Respondent: Professor Robert B. Harris, Professor Robert I. Carr

Programme(s) offered

<table>
<thead>
<tr>
<th>Degree</th>
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<th>Ph.D.</th>
<th>Diploma</th>
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Year Programme Established: 1949
Duration (years) - length of Programme: 1954
3-5

Availability

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National

| Year | 45 | 12 | 3 |
|      |    |    |   |

Foreign

| Year | 5  | 33 |
|      |    |    |

Admission Requirements

3.0/4.0 Exam.

Course Requirements

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<th>Hours Required</th>
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<th>Scholarship, Fellowship</th>
<th>Savings, etc. available</th>
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Language of Instruction: English

Total Numbers of Students Graduated

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<th>Foreign</th>
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<tbody>
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<td>500</td>
<td>200</td>
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</table>

Research

Organizational (Applied) ( )
Engineering (Hard) ( )

Research Funding

(Indicate source & amount (US $)

Describe Nature/objectives of Research

Current research activities are in project scheduling, computer simulation of construction operations, project risk analysis, and construction cost engineering.

Research Facilities

Construction Lab with plantables, micro computer, time lapse equipment, Major library and computer facilities, Civil Engineering Materials, Structures, Geotechnical, etc., Labs

Publications by Programme - only those that can be purchased (do not list articles in publications or out of print)

6. Construction Management and Methods Engineering
7. Excavation and Tunneling
8. Critical Path Methods
9. Project Networking Techniques
10. Construction Decisions Under Uncertainty
11. International Construction
12. Quality Control of Construction Materials
13. Bituminous and Cement Mixes for Constructed Facilities

Educational Programme Objectives: To prepare engineers to solve construction engineering and management problems with the rigorous approach common to other engineering disciplines.

( ) Please check if interested in having above listed in National Technical Information Service for world wide distribution. (Separate instructions will follow on procedures for submission.)

(continued)
## Overview of Construction Programmes

**February 17th, 1991.**

### Name of Institution
UNIVERSITY OF NEBRASKA - LINCOLN

### Faculty/School
CONSTRUCTION MANAGEMENT DEPARTMENT

### Address
45 MINTON HALL, NE 68588

### Year Programme Established
1966

### Duration (years) - length of Programme
4

### Degree Offered
Bachelor, Master, Ph.D.

### Programmes Offered
<table>
<thead>
<tr>
<th>Degree</th>
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### Program Specific

### Admission Requirements
- Open

### Course Requirements - list number of courses needed whether thesis or not
124 credit hours

### Language of Instruction
English

### Total Number of Students Graduated
- National: 332
- Foreign: 18

### Indicate % of funding by
- Government: 100
- Industry: 100
- Other (specify): 50

### Staff Numbers: Totals
- Faculty Full Time (23)
- Part Time (-)
- Industry, Instructors
- Speakers

### Industry Input
- Financial Administrator (1)
- Administrative (1)
- Curriculum Development (1)
- Scholarship, Summer, etc. (1)

### Currents
- Industry Support (1)
- Research (3)
- Other (3)

---

### Course, Titles, Descriptions
Indicate Text Title (if any)

### Educational Programme Objectives:
See attachment

---

### Research (Please tick)
- Organizational (Applied) (1)
- Engineering (Hard) (1)

### Research Funding
- Indicate source & amount (US $)
- 25,000 (1991)

### Describe Nature/Objectives of Research and Research Facilities (if any)

### Are there any special features of your programme. Please indicate.
Industries Management Evaluation
Brief Description of the B.S. Degree Program in CONSTRUCTION MANAGEMENT
Offered by the Department of Construction Management
College of Engineering
University of Nebraska, Lincoln, Nebraska 68588

The Construction Profession

Construction is a team process. Professionals in construction management have final responsibility for converting the designs of architects and engineers into physical reality. Qualified Constructors need a broad education in construction management and methods of operation. They must be leaders with competence in business and labor relations. Construction management involves planning, scheduling, and control of site work. It requires skill in methods of estimating, procurement, allocation, and coordination of resources necessary for the job. Constructors must be experts in construction materials, methods, and equipment. They need a sound knowledge of structural design. They must be able to carefully interpret contract documents including specifications and working drawings, as well as have the ability to communicate clearly in words and sketches. They must understand how to apply computer methods in construction systems analysis and be capable of adapting new techniques to this highly competitive field as they are developed.

In sum, the constructor is a manager of men, machines and material within a time and money framework.

The Construction Management curriculum leads to a Bachelor of Science degree after four years of study. The program prepares you for a professional career in construction contracting or in many other areas closely related to the construction industry.

Admission to the University

Application—You should make your application for admission to the University at the earliest possible date, preferably before the semester preceding your expected enrollment. To obtain application materials and information regarding fees, regulations, etc., write or go to the Director of Admissions, Administration Building, Room 108, Lincoln, NE 68588.

Transfer from other accredited colleges requires individual evaluation. For information, write to the Director of Admissions, Administration Building, Room 108, Lincoln, NE 68588.

Entrance Requirements for Construction Management

The following high school units are required if the student is to enter the Construction Management curriculum without deficiencies:

1. ½ units of mathematics, including 2 of algebra, 1 of geometry, and ½ of trigonometry
2. 3 units of English
3. 1 unit of physics

4. 4 optional units in academic subjects such as English, foreign languages, mathematics, natural sciences, and social sciences.

5. A total of 16 units are required for admission.

CONSTRUCTION MANAGEMENT (CM) CURRICULUM

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<td>Math 106-Anal Geom &amp; Calc 1</td>
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<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>CM 305-Phys Env Systems I (HVAC)</td>
<td>3</td>
</tr>
<tr>
<td>CM 480-Work Anal &amp; Simplt.</td>
<td>2</td>
</tr>
<tr>
<td>Acct 306-Survey of Account.</td>
<td>3</td>
</tr>
<tr>
<td>EM 324-Strength of Matls.</td>
<td>4</td>
</tr>
<tr>
<td>Soc/Hum Elective</td>
<td>3</td>
</tr>
<tr>
<td>Soc/Hum Elective</td>
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<tr>
<td>Soc/Hum Elective</td>
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<table>
<thead>
<tr>
<th>Semester 6</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CM 306-Phys Env Systems II (Elect.)</td>
<td>3</td>
</tr>
<tr>
<td>CM 478-Con Const Anal I</td>
<td>3</td>
</tr>
<tr>
<td>Arch 410-Architectural Design II</td>
<td>3</td>
</tr>
<tr>
<td>Soc/Hum Elective</td>
<td>3</td>
</tr>
<tr>
<td>Tech Elective</td>
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<table>
<thead>
<tr>
<th>Semester 7</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CM 495-Con Mgmt Systems I</td>
<td>3</td>
</tr>
<tr>
<td>CM 499-Con Const Mgmt II</td>
<td>3</td>
</tr>
<tr>
<td>Arch 411-Archit. Design I</td>
<td>3</td>
</tr>
<tr>
<td>Arch 412-Business Law</td>
<td>2</td>
</tr>
<tr>
<td>Mgmt 462-Collective Bargaining</td>
<td>3</td>
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</table>

<table>
<thead>
<tr>
<th>Semester 8</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CM 497-Con Const Anal II</td>
<td>2</td>
</tr>
<tr>
<td>CM 496-Con Const Control</td>
<td>3</td>
</tr>
<tr>
<td>Arch 412-Business Law</td>
<td>2</td>
</tr>
<tr>
<td>Mgmt 360-Human Res. Mgmt.</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours Required: 134

*Of the 24 credit-hour total of electives, a minimum of 9 credit hours of humanistic-social and 9 credit hours of technical electives are required. At least 3 credit hours must be selected from CM 441, CM 460, and CM 486. The balance may be selected in either technical or soc/hum areas.
<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>CONSTRUCTION COMMUNICATIONS I (2 cr)</td>
<td>None, simultaneous registration in CM 131 preferred</td>
<td>Fundamentals of orthographic, isometric and perspective drawing; research and presentation techniques for construction industry report writing; interpretation of working drawings for construction projects.</td>
</tr>
<tr>
<td>102</td>
<td>CONSTRUCTION COMMUNICATIONS II (2 cr)</td>
<td>CM 101 and 131</td>
<td>Review of drawing techniques employed by various design disciplines in the construction industry (schematics, plans, elevations, sections, and details); origin and processing of shop drawings; field sketches and drawings (forming, shoring, construction methodology); laboratory reports (soils, concrete, sealant, acoustic); communications during the construction process (change orders, extras, delays, punch lists, and allowances).</td>
</tr>
<tr>
<td>131</td>
<td>INTRODUCTION TO CONSTRUCTION MANAGEMENT I (2 cr)</td>
<td>None, simultaneous registration in CM 101 preferred</td>
<td>An overview of the entire construction industry and an introduction to basic management principles and practices used in the control of manpower, materials, machinery and money in the production of the built-environment within a time framework.</td>
</tr>
<tr>
<td>132</td>
<td>INTRODUCTION TO CONSTRUCTION MANAGEMENT II (2 cr)</td>
<td>CM 131 and 101</td>
<td>Continuation of Construction Management 131.</td>
</tr>
<tr>
<td>241</td>
<td>CONSTRUCTION EQUIPMENT AND METHODS I (3 cr)</td>
<td>CM 101, 102, 131 and 132, 301 parallel, sophomore standing or permission</td>
<td>A survey of construction equipment and methods from a management point of view. An analytical approach to the development of construction methodology for site, excavation, and foundation work involving safe and economical mixes of manpower and machinery. Includes functions and applications of earthmoving and excavation equipment as well as pile drivers.</td>
</tr>
<tr>
<td>242</td>
<td>CONSTRUCTION EQUIPMENT AND METHODS II (3 cr)</td>
<td>CM 241 and 301: 302 parallel</td>
<td>Continuation of CM 241, with emphasis on the structure from grade to topping out. Functions and applications of material handling equipment from simple pulleys to large cranes. Methods of constructing concrete formwork in a variety of applications. Assembly and erection of steel, wood, precast concrete, and masonry structural elements. Material finishing methods and equipment.</td>
</tr>
<tr>
<td>281</td>
<td>COMPUTATION AND ANALYSIS METHODS I (3 cr)</td>
<td>Math 106</td>
<td>Selected topics in general mathematics and calculus as applied to construction management, architecture, planning and engineering problems. Introduction to computer applications.</td>
</tr>
<tr>
<td>282</td>
<td>COMPUTATION AND ANALYSIS METHODS II (3 cr)</td>
<td>Math 106</td>
<td>Application of statistical analysis and operations research techniques to construction management, architecture, planning and engineering problems. Probability applications to risk and competitive situations.</td>
</tr>
<tr>
<td>301</td>
<td>CONSTRUCTION MATERIALS AND SPECIFICATIONS I (3 cr)</td>
<td>CM 101, 102, 131 and 132</td>
<td>Physical, mechanical, and aesthetic properties of soils, stone, concrete and clay products as they relate to in-service conditions and acceptability, either individually or in combination with other materials. Emphasis on proper methods of specification to achieve design and construction goals and meet zoning, code, and environmental requirements.</td>
</tr>
<tr>
<td>302</td>
<td>CONSTRUCTION MATERIALS AND SPECIFICATIONS II (3 cr)</td>
<td>CM 101</td>
<td>Continuation of Construction Management 301 for wood, metals, gypsum, glass, plastics, and other construction materials and component products.</td>
</tr>
<tr>
<td>305</td>
<td>PHYSICAL ENVIRONMENTAL SYSTEMS I (3 cr)</td>
<td>CM 281 and Physics 131 or 141</td>
<td>Thermal and psychometric environment in buildings related to human comfort. Emphasis on HVAC loads; heat loss/gain, ventilation and humidity calculations. Characteristics and performance of HVAC systems. Review code requirements for mechanical equipment and systems.</td>
</tr>
<tr>
<td>306</td>
<td>PHYSICAL ENVIRONMENTAL SYSTEMS II (3 cr)</td>
<td>CM 281 and Physics 131 or 141</td>
<td>Fundamentals of electric power; generation, distribution, service and circuits in buildings. Electric equipment and systems. Review National Electric Code.</td>
</tr>
<tr>
<td>398</td>
<td>PROBLEMS IN CONSTRUCTION (1-6 cr)</td>
<td>Permission of Chairman</td>
<td>Individual or group investigations of special problems in construction.</td>
</tr>
<tr>
<td>420/820</td>
<td>PROFESSIONAL PRACTICE</td>
<td>Senior or graduate standing</td>
<td>Orientation to professional practice through a study of the designers' and the contractors' relationships to society, specific</td>
</tr>
</tbody>
</table>
CONSTRUCTION MANAGEMENT

Course
Number
430 CONTRACT ADMINISTRATION (3 cr)
Prereq: Senior standing or permission
A study of construction industry business organization forms
and their interaction through agency and independent contractor
relationships. Analysis of the contract documents to define
their basic elements and how they are applied in the construc-
tion industry.

441/461 INDUSTRIALIZED SYSTEMS BUILDING (3 cr)
Lect 3 - Prereq: Senior standing
Historical background of industrialized systems building; its
economic and social relevance in modern society; and its influence
on the traditional role of the contractor within the construction
industry. Changes industrialized systems building will impose
on the contractor's approach to finance, management, and con-
struction methods and equipment.

460 CONSTRUCTION DATA MANAGEMENT SYSTEMS (3 cr)
Prereq: Senior standing or permission
A survey of selected data management systems as related to the con-
struction industry. Topics include: estimating, scheduling,
project management, accounting.

478 CONSTRUCTION COST ANALYSIS (3 cr)
Prereq: CM 478
Detailed cost estimating based upon take-off from contract
documents, labor, overhead, and profits. Analysis pertaining
to building, heavy and industrial construction. Subcontractor
relationships. Assembly of bid proposals.

479 CONSTRUCTION COST ANALYSIS II (2 cr)
Lect 1, lab 2. Prereq: CM 478
Continuation of CM 478 with emphasis on detailed analysis of
possible alternative solutions to specific construction problems.

CONSTRUCTION MANAGEMENT

Course
Number
480/480 CONSTRUCTION WORK ANALYSIS AND SIMPLIFICATION (2 cr undergrad,
Prereq: CM 241 & 242 3 cr grad)
Productivity consideration in the management of construction
workers. Concepts of preplanning, work sampling, methods
analysis, and work simplification applied to on-site construc-
tion projects. The interrelation of safety and productivity
in project management.

481 HUMAN FACTORS IN CONSTRUCTION (2 cr)
Prereq: Senior standing or permission; Mgmt. 360
Human factors that influence productivity in construction.
Motivations of tradesmen, foremen and superintendents will
be discussed in terms of their typical job environments.
Potential ways of influencing productivity and safety will be
evaluated.

ACCTG 260/265 CONSTRUCTION MANAGEMENT SYSTEMS I (3 cr)
Prereq: CM 302, 242, and 282 or approval of instructor
for non-Construction Management majors
Application of network analysis, critical path method (CPM),
program evaluation review technique (PERT), precedence
diagramming and analog charts to planning, resource scheduling,
and control of projects. Systems solution by manual calcula-
tion and digital computer methods.

ACCTG 366/366 CONSTRUCTION MANAGEMENT SYSTEMS II (3 cr)
Prereq: CM 282 (or equivalent background in calculus,
statistics, and computer science)
Application of selected topics in systems analysis (operations
research) to construction management: competition strategy,
linear programming, queuing, transportation, time-cost trade-
off, learning curves, and other models. Computer applications.

ACCOUNTING AND BUSINESS LAW

Course
Number
306 SURVEY OF ACCOUNTING (4 cr)
Prereq: Junior standing
A one-semester course designed for students above the sophomore
level who desire a knowledge of the fundamentals of accounting.
Develops those fundamentals of accounting analysis which are
most helpful in understanding managerial and business concepts
and practices.
BUSINESS LAW (3 cr)
Prereq: Junior standing and Econ 210 or 211
Agency; creation; powers; termination; duties and liabilities of principal and agent. Negotiable instruments; elements of negotiability; endorsements and transfer; liability of parties; presentation, notice and protest; discharge. Business organizations; partnerships; corporations—organization, stockholders, directors, dissolution; business trusts.

AGRICULTURAL COMMUNICATIONS
200 TECHNICAL WRITING (3 cr)
Prereq: Sophomore standing
The basic techniques used in technical writing. Emphasis on writing, analyzing, and evaluating technical and scientific information.

ARCHITECTURE
308 ARCHITECTURE AND ENVIRONMENTAL STUDIES (3 cr)
Lect 3 - Prereq: Junior standing (waived for CM)
Background and development of architecture and environmental design. Forces influencing the development of our physical surroundings. Not open to majors in architecture.

410 ARCHITECTURAL STRUCTURES I (3 cr)
Prereq: EM 220 and 324
Analysis and design of structural members in wood, steel, and concrete with emphasis on columns, walls, footings, soils, trusses, and construction. Comparative building designs.

411 ARCHITECTURAL STRUCTURES II (3 cr)
Prereq: Arch 410
Analysis and design of structural members in wood, steel, and concrete with emphasis on columns, walls, footings, soils, trusses, and construction. Comparative building designs.

CIVIL ENGINEERING
221 SURVEYING (3 cr)
Prereq: Math 101 and EM 111 (waived for CM)
Theory and practice of surveying; care, use and adjustment of surveying instruments; measurement of distance, direction, and elevation; analysis and computation of field data; systems of recording data.

ECONOMICS
210 INTRODUCTION TO ECONOMICS (5 cr)
Prereq: Sophomore standing and above
A study of the principles which govern the organization and behavior of the modern economic system. Topics covered include the nature of economics and the economic system; national income measurement and determination; money and the economic system; government and the economy; economic growth; the allocation of economic resources; the distribution of income; and the international economy.

ENGINEERING MECHANICS
220 STATICS (3 cr)
Prereq: Math 106
For students in Architecture and Construction Management. Fundamental concepts, equilibrium of force systems, analysis of simple frames and trusses. Centroid and moments of inertia, friction, shear and bending moment diagrams. Laboratory tests showing behavior of materials under tension and compression loading.

324 STRENGTH OF MATERIALS (3 cr)
Lect 3 - Prereq: EM 220 or 223

FINANCE
361 FINANCE (3 cr)
Prereq: Junior standing
Scope and content of the finance specialization: survey of the major theoretical issues, study of the financial instruments, analysis of the capital management problems and development of criteria for financial decision-making.

INDUSTRIAL AND MANAGEMENT SYSTEMS ENGINEERING
205 INTRODUCTION TO ENGINEERING MANAGEMENT (3 cr)
Prereq: Sophomore standing
An introduction to the quantitative approach to engineering decision-making as it operates within the complex organization of industry. Theory and structure of formal and informal organizations.
MANAGEMENT

360 HUMAN RESOURCES MANAGEMENT (3 cr)
Prereq: Junior standing
A study of the human resources used in management. The
course gives a historical perspective to the development
of organizations, management practices, and the behavioral
sciences. A basic understanding is given of individual
and organizational characteristics and processes as they
affect the management of human resources. Special topics
include management and organization theory, motivational
processes, leadership, decision making, selection, and employee
development. Examples are discussed from business health care,
educational, and government institutions.

462 COLLECTIVE BARGAINING (3 cr)
Prereq: Mgm 360 or Econ 301 or equivalent
An interdisciplinary approach to collective bargaining
as an agreement-making and agreement-administering concept
between labor and management. Utilizes theoretical analysis
and research reports. Consideration is given to the analysis
of principles of collective bargaining as well as the
application of these principles through the actual negotiat-
ing of a labor-management contract.

MATHEMATICS

106 ANALYTIC GEOMETRY AND CALCULUS (5 cr)
Prereq: Math 101 and 102 or equivalent high school
preparation
Functions, limits, derivatives of algebraic functions,
applications of differentiation, integrals, applications
of integration.

PHYSICS

131 (or
141) ELEMENTARY GENERAL PHYSICS (5 cr)
Prereq: 1 yr each of high school algebra and plane geometry
Mechanics, heat, electromagnetism.

SPEECH

311 BUSINESS AND INDUSTRIAL COMMUNICATION (3 cr)
Prereq: Sophomore standing
The basic objective of this course is to provide students
with a variety of theoretical and verbal communication
approaches that are intended to help them achieve maximum
effectiveness in their day-to-day relations with "people
at work." Specifically, the course focuses on: developing
interpersonal relationships and competency; interviewing
techniques; oral report/technical presentation techniques;
small group problem solving/leadership; organizational
communication.
Study of Construction Programmes

February 17th, 1961.

Name of Institution: University of Wisconsin
Faculty/School: 460 Henry Hall
Address: Madison, WI 53706

Name, Title of Contact: Dick J. Sklith, Professor, Construction Administration Advisor
Name, Title of Respondent: Same as Contact

Programmes Offered
<table>
<thead>
<tr>
<th>Degree</th>
<th>Bachelor</th>
<th>Master</th>
<th>Ph.D</th>
<th>Non-Deg. Diploma</th>
<th>Non-Deg. Certificate</th>
<th>Programme Specific</th>
</tr>
</thead>
</table>

Year Program Established: 1944
Duration (years) - length of Programme: 4 years

Enrollment: 160
- Current Part Time: 5
- Current Full Time: 155

Admission Requirements: 24 semester credits completed, including 5 credits of Calculus and G.P.A. of 2.25.

Course Requirements: 130 semester credits.
Whether thesis or not: No thesis.

Scholarship, Fellowship, Bursaries, etc. available: Yes

Language of Instruction: English

Total Numbers of Students Graduated: ?
- National: 99.5%
- Foreign: less than 0.5%

Indicate % of funding by:
- Government: 100%
- Industry: (specify)
- Other: College & gifts

Staff Numbers: Totals
- Faculty Full Time: (1)
- Part Time: (5)
- Industry, Instructors: Speakers: ....

Industry Input:
- Financial Administrative ( )
- Curriculum Development ( )
- Scholarship, Bursaries etc. ( )
- Overlapping Body Industry Liaison ( )

Comments

Course, Titles, Descriptions
Indicate Text Title (if any)

Some of the 130 semester credits required for B.S. Construction Administration, 10 are taught in the Department of Agricultural and Life Sciences, and College of Letters and Science.

Educational Programme Objectives:
Prepare students for some phase in the building construction industry as construction rather than for engineering design. The emphasis of the curriculum is toward the business of construction.

Research (Please tick)
- Organizational (Applied) ( )
- Engineering (Hard) ( )

Research Funding
- (Indicate source & amount (US $))
- Describe Nature/objecives
- Research not usually required at undergraduate level.
- Research Facilities (if any) U.S. Forest Products Laboratory, Madison, WI

Are there any special features of your programme. Please indicate.

Up to 8 semester credits of coordinated internship credits available for full-time construction industry employment.
Study of Construction Programmes

February 17th, 1981.

Name of Institution: Department of Civil & Environmental Engineering

University of Wisconsin-Madison

Faculty/School: 1415 Johnson Drive

Address: Madison, WI 53706

Name, Title of Contact: Dr. Edward Kulper, Professor

Name, Title of Respondent: Dr. Edward Kulper, Professor

Programmes offered:

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>Bachelor</td>
<td>Master</td>
<td>Ph.D.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Year Programme Established: 4

Duration (years) - length of Programme: 1

Enrollment:

Current Part Time: Unknown

Current Full Time: Unknown

Other (specify) of which:

National: -

Foreign: -

Admission Requirements:

Course Requirements - list number of courses needed:

135 cr

whether thesis or not: cr

Scholarship, Fellowship, Bursaries, etc. available:

Yes

Yes

Yes

Language of instruction: English

Total Numbers of Students Graduated:

National Unknown Foreign Unknown

Indicate % of funding by:

Government: 100%

Industry: 25%

Other (specify):

Staff Numbers: Totals (indicate #’s)

Faculty Full Time (1) Part Time (4) Industry,Instructors, Speakers

Industry Input (Please tick)

Financial Administration ( ) Curriculum Development ( )

Scholarship, Bursaries etc. (X) Overseas Body Industry Liaison (X)

Course, Titles, Descriptions

Indicate Text Title (if any)

CEE 491: Legal Aspects of Engineering

CEE 492: Estimates and Costs

CEE 493: Economic Selection

CEE 494: Civil and Environmental Decision Making

CEE 495: Civil and Environmental Systems and Modelling Techniques

CEE 590: Critical Path Network Techniques

CEE 647(a): Planning and Design of Construction Operations

( ) Estimating System and Scheduling

(c): Advanced Project Management

CEE 593: Civil Engineering Construction Equipment and Methods

CEE 594: Building Construction Systems

Bus 350: The Real Estate Development Process (Grad. St. take Bus. 705)

Bus 559: Construction Enterprise Management

Educational Programme Objectives:

To provide engineering education for students interested in the construction industry and to provide an environment for classroom, laboratory, and individual research oriented education.

Research (Please tick)

Organisational (Applied) (X) Engineering (G)

Research Funding

Indicate source & amount (US $)

Describe Nature/objectives Construction Productivity, Systems Modelling of Research in Construction, Life Cycle Cost of Construction Materials, and

Research Facilities (if any) Construction Materials Laboratories, a wide range of state-of-the-art computer facilities.

Are there any special features of your programme. Please indicate.

By design, all levels of our curriculum are designed with a maximum of flexibility to allow the student to concentrate on his personalized study program in his selected area of interest.

Comments
Study of Construction Programmes

Name of Institution: University of Wisconsin-Platteville

Faculty/School: Dr. Alva H. Jared, Chairman, Department of Industrial Studies
Education: College of Business, Industry and Communication
Location: Platteville, WI 53858

Name, Title of Contact: Dr. A. H. Jared, Chairman, Department of Industrial Studies

Program/Programme offered:
- Bachelor of Science in Construction
- Master of Science in Construction

Test Programme Established: 1970
Duration (years) - length of Programme: Full Time - 85 students

Enrollment:
- Current Part Time: 
- Current Full Time: 
- Other (specify): 
- National: 
- Foreign: 

Admission Requirements: Meet general university entrance requirements

Course Requirements - list number of courses needed whether thesis or not:

- Scholarship, Fellowship: $600 Fish Building & Supply
- Bursaries, etc. available: $1000 Eastern Cartwright Lumber Inc., other local/state/national
- Trade association monies available:

Language of Instruction:
- National: 
- Foreign: 

Total Numbers of Students Graduated: 16

Indicate 2 of funding by:
- Administration (National)
- Scholarship (State supported institution)
- Research

Staff Numbers: Totals (Indicate #'s):
- Faculty Full Time: 2
- Part Time: 0

Industry Input:
- Financial Administrative: 0
- Curriculum Development: 0
- Scholarship, Bursaries, etc.: 0
- Overseas Industry Liaison: 0

Comments: 

Course, Titles, Descriptions
- Indicate Text Title (if any)
- Gen. Constr. Core Required
- 111 Intro. to Industry
- 112 Woodworking
- 243 Construction Materials & Graphics
- 271 Anal. of Industrial Safety
- 321 Construction Laboratory
- 322 Construction Procedures
- 499 Industrial Internship
- Construction Design Area of Emphasis
- 212 Construction Design
- 254 Met'l. Tech.of Bldg. Const.
- 453 Res. Planning & Design
- 463 Housing Systems Analysis
- 473 Housing Synthesis
- 496 Commercial Bldg. Design & Construction Techniques

Construction Supervision
- Area of Emphasis Sample of Courses
- 263 Intro. to Marketing
- 296 Industrial Train. Methods
- 305 Personnel Administration
- 310 Wage & Salary Admin.
- 312 Construction Proj. Analysis
- 396 Prin. of Tech. Sales
- 680 Construction Administration
- 695 Prod. Plan. & Control
- General university requirements
- (47 cr.) including math, English, science, social studies, and humanities.

Educational Programme Objectives: Students at the UW-Platteville receive in building construction an in-depth background in building construction theory and practice, mathematics, physical and social sciences, communication skills, business, economics and human relations. This broad preparation enables a graduate to cope with the wide range of construction activities and problems confronting the building construction industry.

Research (Please tick):
- Organizational (Applied)
- Engineering (Hard)

Research Funding: N/A
(Indicate source & amount (US $))

Describe Nature/objectives of Research

Research Facilities (if any)

Are there any special features of your programme? Please indicate.

Internships: All building construction majors must intern with a construction company or agency, earning 2-6 credits while getting on-the-job experience. This cooperative education program has several advantages: students receive both financial compensation and course credit for the work and at the same time gain the practical knowledge and understanding of building construction that many employers seek.
Study of Construction Programmes

Name of Institution: CIVIL ENGINEERING INDUSTRY TRAINING BOARD

Faculty/School: PRIVATE BAG 1 GARDENVIEW 2047

Republic of South Africa

Name, Title of Contact: MR. R.G. SPARKANOS

Name, Title of Respondent: DIRECTOR OF TRAINING

Programme(s) offered:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Degree</th>
<th>Degree</th>
<th>Non-deg.</th>
<th>Non-deg.</th>
<th>Part of Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor</td>
<td>Master</td>
<td>Ph.D.</td>
<td>Diploma</td>
<td>Certificate</td>
<td>Programme Specif</td>
</tr>
</tbody>
</table>

Year Programme Established: 1980

Duration (years) - length of Programme: 1 week

Enrollment:

Current Part Time: +

Current Full Time: +

Other (specify): + 25 per course of which:

National:

Foreign:

Admission Requirements:
CONSTRUCTION EXPERIENCE AT SITE MANAGEMENT LEVEL - BETWEEN 2 TO 5 YEARS.

Course Requirements - list number of courses needed whether thesis or not:

Scholarship, Fellowship, Bursaries, etc. available:

Language of Instruction:

Total Numbers of Students Graduated:

National | Foreign

Indicate % of funding by:

Government:

Administration | Scholarship | Research

Industry: 100%

Other (specify):

Staff Numbers: Totals (Indicate #’s):

Faculty Full Time ( ) Part Time (2) Industry, Instructors (8)

Speakers ........

Industry Input (Please tick):

Financial Administration (X) Curriculum Development ( )

Scholarship, Bursaries etc. ( ) Overseeing Body Industry Liaison ( )

Comments:

Course, Titles, Descriptions:

Educational Programme Objectives:

THESE COURSES ARE AN INTRODUCTION TO THE CONSTRUCTION MANAGEMENT PROGRAMME.

Research (Please tick):

Organizational (Applied) ( ) Engineering (Hard) ( )

Research Funding:

(Indicate source & amount (US $))

Describe Nature/objectives of Research:

Research Facilities (if any):

Are there any special features of your programme. Please indicate.
February 17th, 1981.

**Course, Titles, Descriptions**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>FINANCIAL MANAGEMENT.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>ENGINEERING ECONOMY.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>CONSTRUCTION MANAGEMENT.</td>
<td></td>
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<tr>
<td>4.</td>
<td>OPERATIONS ANALYSIS.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>THE ARCHITECT AND ENGINEER.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>RESPONSIBILITY ACCOUNTING.</td>
<td></td>
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<tr>
<td>7.</td>
<td>HUMAN RELATIONS AND ORGANISATIONAL BEHAVIOUR.</td>
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<tr>
<td>8.</td>
<td>MARKETING.</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>PROJECT MANAGEMENT TECHNIQUES.</td>
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</tr>
<tr>
<td>10.</td>
<td>PROJECT EVALUATION.</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>EQUIPMENT MANAGEMENT.</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>INDUSTRIAL RELATIONS.</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>QUALITY ASSURANCE.</td>
<td></td>
</tr>
</tbody>
</table>

**Admission Requirements**

GRADUATE WITH 5 YEARS EXPERIENCE.

**Research (Please tick)**

Organizational (Applied) ( ) Engineering (Hard) ( )

**Research Funding**

(Indicate source & amount (US $))

**Describe Nature/Objectives of Research and Research Facilities (if any)**

Are there any special features of your programme. Please indicate.

---

**Course, Titles, Descriptions**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>FINANCIAL MANAGEMENT.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>ENGINEERING ECONOMY.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>CONSTRUCTION MANAGEMENT.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>OPERATIONS ANALYSIS.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>THE ARCHITECT AND ENGINEER.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>RESPONSIBILITY ACCOUNTING.</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>HUMAN RELATIONS AND ORGANISATIONAL BEHAVIOUR.</td>
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</tr>
<tr>
<td>8.</td>
<td>MARKETING.</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>PROJECT MANAGEMENT TECHNIQUES.</td>
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<td>10.</td>
<td>PROJECT EVALUATION.</td>
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<td>11.</td>
<td>EQUIPMENT MANAGEMENT.</td>
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<td>12.</td>
<td>INDUSTRIAL RELATIONS.</td>
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<tr>
<td>13.</td>
<td>QUALITY ASSURANCE.</td>
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**Admission Requirements**

GRADUATE WITH 5 YEARS EXPERIENCE.

**Research (Please tick)**

Organizational (Applied) ( ) Engineering (Hard) ( )

**Research Funding**

(Indicate source & amount (US $))

**Describe Nature/Objectives of Research and Research Facilities (if any)**

Are there any special features of your programme. Please indicate.
CIB - W65
Study of Construction Programmes

Name of Institution: UNIVERSITY OF PRETORIA
Faculty/School: PRETORIA, 0022, REPUBLIC OF SOUTH AFRICA.

Name, Title of Contact: PROFESSOR F. FOURIE.
Name, Title of Respondent: CO-ORDINATOR.
Programme/s offered: Degree Degree Degree Non-deg. Non-deg. Part of Other Bachelor Master Ph.D Diploma Certificate Programme Specif

Year Programme Established: 1980
Duration (years) = length of Programme: 6 weeks
Enrollment
Current Part Time: 1980
Current Full Time: 12
Other (specify) of which
National: PRETORIA
Foreign: 1

Admission Requirements: GRADUATE WITH 5 YEARS EXPERIENCE.

Course Requirements - list number of courses needed whether thesis or not

National 32 Foreign 5
Administration Scholarship Research

Language of Instruction

Total Numbers of Students Graduated= National 19 Foreign 1
Attended since 1978.

Indicate % of funding by Government Industry Other(specific)

Staff Numbers: Totals (Indicate #’s)
Faculty Full Time ( ) Part Time ( ) Industry,Instructors ( ) Speakers ( )

Industry Input
Financial Administrative ( ) Curriculum Development ( )
Scholarship, Bursaries etc. ( ) Overseen By: Industry Liaison ( )

Comments

Course, Titles, Descriptions
Indicate Text Title (if any)

THE CONSTRUCTION MANAGEMENT PROGRAMME COVERS:
1. OPERATIONS ANALYSIS.
2. MANAGEMENT ACCOUNTING AND FINANCE.
3. PERSONAL ORGANISATION AND THE CONDUCT OF MEETINGS.
4. PROJECT PLANNING AND CONTROL.
5. HUMAN FACTORS.
6. ENGINEERING ECONOMY.
7. QUANTITATIVE METHODS IN CONSTRUCTION.
8. CONSTRUCTION PLANT.
9. CONTRACT LAW.
10. MANPOWER PLANNING AND UTILISATION.
11. MARKETING OF ENGINEERING PROJECTS AND SERVICES.
12. WESTGATE BRIDGE.

Educational Programme Objectives:

Research (Please tick) Organizational (Applied) ( ) Engineering (Hard) ( )
Research Funding
(Indicate source & amount (US $))

Describe Nature/objectives of Research and
Research Facilities (if any)

Are there any special features of your programme. Please indicate.
**Course, Titles, Descriptions:**
- Management Accounting and Finance
- Engineering Economy
- Contract Strategy
- Project Management
- Contract Law
- Marketing of Construction and Engineering Services
- Construction Law
- Project Planning and Scheduling
- Quantitative Methods in Construction
- Operations Analysis
- Human Factors
- Manpower Planning and Utilization
- Personal Organisation and the Control of Work
- Success Negotiation

**Educational Programme Objectives:**
To provide professional management training to produce graduates in the construction industry who have a professional background in management and are able to handle the changing responsibilities of their positions.

**Research (Please tick):**
- Organisational (Applied) ( )
- Engineering (Hard) ( )

**Research Funding:**
- (Indicate source & amount (US $))
  - Unable to define in relation to other costs.

**Describe Nature/objectives of Research:**
- ( )

**Research Facilities (if any):**
- ( )

**Are there any special features of your programme? Please indicate:**
- ( )
CIB - W5
Study of Construction Programmes

February 17th, 1981.

Name of Institution: UNIVERSITY OF PRETORIA
Faculty/School: CONSTRUCTION MANAGEMENT DIVISION, DEPARTMENT OF CIVIL ENGINEERING
Address: UNIVERSITY OF PRETORIA, PRETORIA, SOUTH AFRICA

Name, Title of Contact: PROF. F. FOURIE
Name, Title of Respondent: 

Programmes Offered

<table>
<thead>
<tr>
<th>Degree</th>
<th>Bachelor</th>
<th>Master</th>
<th>Ph.D.</th>
<th>Diploma</th>
<th>Non-deg.</th>
<th>Part of Other Programme</th>
<th>Specify</th>
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<tbody>
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<td></td>
<td></td>
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<td>Duration (years) - Length of Programme</td>
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<td></td>
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</table>

Admission Requirements

Bachelor Civil Engineering

Course Requirements - list number of courses needed whether thesis or not

Scholarship, Fellowship, etc. available

From Industry

Language of Instruction

80% Afrikaans & 20% English

Total Numbers of Students Graduated

National 27 | Foreign — |

Indicate % of funding by

Administration | Scholarship | Research |

Government | 60 | 50 |

Industry | 40 | |

Other (specify)

Indicate Numbers of Staff:

Faculty Full Time (3) | Part Time (4) | Industry, Instructors | Speakers | (7) |

Industry Input

| Financial Administrative (-) | Curriculum Development (-) | Scholarship, Bursaries etc. (-) | Overseeing Body | Industry Liaison (+) |

Comments

Course, Titles, Descriptions

Indicate Text Title (if any:

1. Project Planning
2. Project Administration
3. Project Accounting & Financing
4. Construction Equipment
5. Construction Contract Law
6. Personal Management
7. Operations Analysis
8. Networking Techniques

Educational Programme Objectives: To educate better project and construction managers for industry.

Research (Please tick)

Organizational (Applied) (-) | Engineering (Hard) (-)

Research Funding

Indicate source & amount (US $)

Government: $10,000 per year

Industry: $20,000 per year

Describe Nature/Objectives of Research and Research Facilities (if any)

Mostly development work

Computers & Time Lapse equipment

Are there any special features of your programme. Please indicate.
February 17th, 1981.

Study of Construction Programmes

Name of Institution: Technion, Israel Institute of Technology

Faculty/School: Department of Civil Engineering

Name, Title of Contact: Prof. S. Peer

Programmes offered:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Bachelor</th>
<th>Master</th>
<th>Ph.D</th>
<th>Non-Deg. Diploma</th>
<th>Non-Deg. Certificate</th>
<th>Part of Programme</th>
<th>Other Specified</th>
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<tr>
<td>1970</td>
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</table>

Year Programme Established: 1964
Duration (years) - length of Programme: 4

Enrollment:

| Current Part Time | 30 | 3 |
| Current Full Time | 200| 16| 8 |

Other (specify) of which:

| National | 200 | 46 | 9 |
| Foreign  |     |    | 2 |

Admission Requirements:

Matric., B.Sc., M.Sc.

Course Requirements - list number of courses needed and whether thesis or not:

| Yes | Yes |

Scholarship, Fellowship, etc. available:

| Yes | Yes |

Language of Instruction: Hebrew

Total Numbers of Students Graduated:

<table>
<thead>
<tr>
<th>National 65</th>
<th>Foreign 4</th>
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<tbody>
<tr>
<td>Administration</td>
<td>Scholarship</td>
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<td>Government</td>
<td>90</td>
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<tr>
<td>Industry</td>
<td>10</td>
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<tr>
<td>Other(specify)</td>
<td>20</td>
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</table>

Staff Numbers: Totals (Indicate 8's)

| Faculty Full Time | 3 | Part Time | 6 |
| Industry, Instructors |   | Speakers | 4 |

Industry Input:

<table>
<thead>
<tr>
<th>Financial Administrative</th>
<th>Curriculum Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scholarship, Bursaries etc.</td>
<td>Overseeing Body</td>
</tr>
</tbody>
</table>

Research (Please tick):

Organisational (Applied) (✓) Engineering (Hard) (✓)

Research Funding:

(Indicate source & amount (US $))

$30,000 per year

Describe Nature/objectives of Research:

Basic and applied research

Research Facilities (if any):

Computer support; time study equipment

Are there any special features of your programme? Please indicate.

Comments
CIB - W85
Study of Construction Programmes
February 17th, 1981.

Name of Institution: Musashi Institute of Technology
Faculty/School: Department of Architecture, Faculty of Engineering
Address: 1-28-1 Tamaatsumi, Setagaya-ku, Tokyo, Japan

Name, Title of Contact: Tadashi Eguchi, Professor
Name, Title of Respondent: 


Year Programme Established: 1929 (the year Department of Architecture established)
Duration (years) - length of Programme: 

Enrollment:
- Current Part Time: students of dept. of Architecture
- Current Full Time: 521 (total of 4 grades)
- Other (specify) of which: 20 (post-graduate)
- National: almost all
- Foreign: very few

Admission Requirements:
- Course Requirements - list number of courses needed whether thesis or not (a lecture course of 90 minutes a week for a year is equivalent three "units"
- Scholarship, Fellowship: Japan Educational Association's Scholarship (Government funds) and some private scholarship of small
- Bursaries, etc. available: 

Language of Instruction: Japanese

Total Numbers of Students Graduated (Post-graduate 63)
National 52 (1)
Foreign 11

Indicate % of funding by Government Industry
Administration Scholarship Research

Staff Numbers: Totals (Indicate #s)
Faculty Full Time (4) Part Time ( Industry, instructors ( ) Speakers ....... (20)

Industry Input (Please tick)
Financial Administrative ( ) Curriculum Development ( ) Scholarship, bursaries etc. ( ) Overseas Industry Liaison ( )

Research (Please tick)
Organizational (Applied) ( ) Engineering (Hard) ( )

Research Funding (Indicate source & amount (US $)

Describe Nature/objectives of Research and Services (if any)

Are there any special features of your programme. Please indicate.

The Department of Architecture belongs to the Faculty of Engineering. This is usual in Japan. Research on organization and management of construction is not popular in Department of Architecture nor in Department of Civil Engineering. Researches on engineering (hard) and design are popular in both Departments.
**CIB - W65**  
Study of Construction Programmes

**February 17th, 1981.**

**Name of Institution:**  
Kyoto University  
Dept. of Civil Engineering

**Faculty/School:**  
Faculty of Engineering

**address:**  
Yoshida-Hommachi, Sakyo-ku, Kyoto, 606, Japan

**Name, Title of Contact:**  
Kazuhiko Yoshikawa  
Professor, Dr. of Eng.

**Name, Title of Respondent:**  
Kazuhiko Yoshikawa  
Professor, Dr. of Eng.

**Programmes offered:**  
Degree  
Bachelor  
Master  
Ph.D.  
B.A.  
Diploma  
Non-deg.  
Non-deg.  
Part of Certificate Programme  
Special

**Year Programme Established:**  
4 years  
2 years  
1 years

**Duration (years) - length of Programme:**  
10 hr/yr  
10 hr/hr

**Enrolment:**

<table>
<thead>
<tr>
<th>Current Part Time</th>
<th>Current Full Time</th>
<th>Other (specify):</th>
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<tbody>
<tr>
<td>120/yr 60/yr 5/yr</td>
<td>in total of dept. of Civil Eng.</td>
<td>(---) (---/yr) (---/yr) (construction programme)</td>
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<table>
<thead>
<tr>
<th>National</th>
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</thead>
<tbody>
<tr>
<td>118</td>
<td>55</td>
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</tbody>
</table>

| 4       | 1       |

**Admission Requirements:**  
must pass the entrance exam. of Kyoto University

**Course Requirements - list number of courses needed**  
whether thesis or not

**Scholarship, Fellowship, Bursaries, etc. available:**  
available

**Language of instruction:**  
japanese

<table>
<thead>
<tr>
<th>National</th>
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<tbody>
<tr>
<td>3</td>
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<thead>
<tr>
<th>Administration</th>
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<td>0</td>
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</table>

<table>
<thead>
<tr>
<th>Industry</th>
<th>Other (specify)</th>
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<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Faculty Full Time</th>
<th>Part Time</th>
<th>Industry, Instructors</th>
<th>Speakers</th>
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<tbody>
<tr>
<td>(4)</td>
<td>(5)</td>
<td>(1)</td>
<td>(3)</td>
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<tr>
<th>Industry Input</th>
<th>Financial Administration</th>
<th>Curriculum Development</th>
<th>Scholarship, Bursaries etc.</th>
<th>Overseeing Body Industry Liaison</th>
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<tr>
<td>(1)</td>
<td>(1)</td>
<td>(1)</td>
<td>(1)</td>
<td>(1)</td>
</tr>
</tbody>
</table>

| Comments | Undergraduate course is not divided into special programme or courses such as construction one |

---

**Course, Titles, Descriptions**

- Indicate any title (if any)
  - Construction planning
  - Construction engineering

**related programme**

- Elements of planning in civil engineering systems and study of public works
- Construction engineering adv.
- Construction machinery

**Educational Programme Objectives:**

- principle and concept of construction management
- technology and techniques for construction management especially based on systems analysis

**Research (Please tick):**

- Organizational (Appl.) (✓)  
- Engineering (Third) (✓)

**Research Funding**

- (Indicate source & amount US $)  
- About 10,000 usd per year from Ministry of Education

**Describe Nature/objectives of Research**

- Establish the construction management system
- Time-lapse camera set
- Portable video set
- Micro computer system (Sord M7000 Mark II series)
- Color graphic display, digitizer etc.

**Research Facilities (If any):**

- Are there any special facilities in your programme? Please indicate.

Kyoto University is a unique university that has Construction Management Programmes.  
We have close contact and liaison with construction industry
CIB - 465
Study of Construction Programmes

February 17th, 1981.

Name of Institution: TAKENAKA KOMITEN CO., LTD., TECHNICAL RESEARCH LABORATORY.

Faculty/School address: 3-14, 2-chome, MINAMI-SHIBA, KOTO-KU, TOKYO, JAPAN.

Name, Title of Contact: (Mr.) T. KANAZAWA, Research Engineer.
Name, Title of Respondent: (Mr.) H. KONDA, Head of Research Laboratory.

Programme/s offered: Degree Degree Degree Non-deg. Non-deg. Part of Other Bachelor Master Ph.D Diploma Certificate Programme Special

Year Programme Established: 
Duration (years) - length of Programme: 

Enrollment: Current Part Time 
Current Full Time 
Other (specify) of which:
National 
Foreign 

Admission Requirements: 

Course Requirements - list number of courses needed whether thesis or not:

Scholarship, Fellowship Bursaries, etc. available:

Language of Instruction:
Total Numbers of Students Graduated:

Indicate % of funding by Government:

Administration Scholarship Research

Industry Others (specify)

Staff Numbers: Total (Indicate #’s):

Faculty: Full Time ( ) Part Time ( ) Industry, Instructors ( ) Speakers ( )

Industry Input (Please tick):
Financial Administrative ( ) Curriculum Development ( ) Scholarship, Bursaries etc. ( ) Overseeing Body Industry Liaison ( )

Comments:

Course, Titles, Descriptions
Indicate Test Title (if any)

Our company, TAKENAKA KOMITEN CO., LTD., is one of representative general contractors in JAPAN.
Please refer to our leaflet enclosed.

Educational Programme Objectives:

Research (Please tick) Organizational (Applied) ( ) Engineering (Pure)

Research Funding (Indicate source & amount (US $)) Private source (TAKENAKA KOMITEN Co., Ltd.) & National funds based on projects.

Describe Nature/objectives of Research and:

Research Facilities (if any) And the research fields of CONSTRUCTION unit includes:

1) Engineering (Hardware) 2) Organization
2) Construction Materials, Environment etc. 3) Quality Control
3) Work Study 4) etc.
4) Scheduling & Resource Allocation

Are there any special features of your programme. Please indicate.
February 17th, 1981

<table>
<thead>
<tr>
<th>Study of Construction Programmes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name of Institution</strong></td>
</tr>
<tr>
<td><strong>Facility/Address</strong></td>
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<table>
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<th><strong>Programme(s) Offered</strong></th>
<th>Degree</th>
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<th>Non-Sem.</th>
<th>Part of Other Certificate Programme</th>
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<td>3-5</td>
<td>109</td>
<td>M11</td>
<td>M11</td>
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<td>1</td>
<td>109</td>
<td>M11</td>
<td>M11</td>
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<td></td>
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<td><strong>Language of Instruction</strong></td>
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</tr>
<tr>
<td><strong>Total Number of Students Graduated</strong></td>
<td>National</td>
<td>133</td>
<td>Foreign</td>
<td>23</td>
<td></td>
<td></td>
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<tr>
<td><strong>Indicate No. of Courses by</strong></td>
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<td>Scholarship</td>
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<td>Research</td>
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<td><strong>Indicate Source of Funding by Department</strong></td>
<td>Industry</td>
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<tr>
<td><strong>Staff Numbers: Totals (Indicate e.g.)</strong></td>
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<td>Part Time</td>
<td>4</td>
<td>Industry, Instruction</td>
<td>9</td>
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<td>Organizational (Applied) (✓) Engineering (✓)</td>
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<tr>
<td><strong>Research Funding</strong> (Indicate source &amp; amount (US $))</td>
<td>Varies from year to year.</td>
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<table>
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<tr>
<th>Course, Title, Description</th>
<th>Indicate Text Title (If any)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Degree Bachelor, B.Sc. Building</strong></td>
<td></td>
</tr>
</tbody>
</table>

| Educational Programme Objectives: | |
|----------------------------------| To prepare the students for professional practice in the building and construction industry so that after adequate field experience graduates are capable of entering managerial and executive positions. |
| Research (Please tick) | Organizational (Applied) (✓) Engineering (✓) |
| Research Funding (Indicate source & amount (US $)) | Varies from year to year. |
| Describe Nature/objectsives of Research (Please tick) | To tackle problems of the construction industry related to building practice, construction economics, project management etc. |
| Research Facilities (If any) | All modern research facilities are available. |
| Are there any special features of your programme. (Please indicate.) | |
**CIB - W65**

**Study of Construction Programmes**

**Name of Institution** Chair of Construction Management Technical University of Istanbul

**Faculty/School** Faculty of Civil Engineering, I.T.U., İnşaat Fakültesi

**Address** Yapi İ村委会 Kırıkkale, Taşkışla Istanbul/Turkey

**Name, Title of Contact** Dr. Ing. V. Dogan Sorguç

**Name, Title of Respondent** See Title of Respondent

**Programme/s offered** Degree Degree Degree Non-deg. Non-deg. Part of Other
Bachelor Master Ph.D Diploma Certificate Programme Specify

<table>
<thead>
<tr>
<th>Year Programme Established</th>
<th>Planned Year Duration</th>
<th>Planned Year Duration</th>
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<tbody>
<tr>
<td>1977</td>
<td>3 courses 1.5 years</td>
<td>1 person 1 year</td>
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**Enrollment**

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<td>125</td>
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</table>

**Admission Requirements**

<table>
<thead>
<tr>
<th>National</th>
<th>Foreign</th>
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</thead>
<tbody>
<tr>
<td>110</td>
<td>15</td>
</tr>
</tbody>
</table>

**Course Requirements - List**

- All C.E. courses
- Related courses
- Degree project
- General scholarships
- Available to C.E. students

**Language of Instruction** Turkish

**Total Numbers of Students Graduated**

<table>
<thead>
<tr>
<th>National</th>
<th>Foreign</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td></td>
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</table>

**Indicate % of funding by**

<table>
<thead>
<tr>
<th>Administration</th>
<th>Scholarship</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Industry</td>
<td>Negligible</td>
<td>Starting</td>
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<tr>
<td>Other(specify)</td>
<td></td>
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</table>

**Staff Numbers**

<table>
<thead>
<tr>
<th>Faculty Full Time (7)</th>
<th>Part Time (1)</th>
<th>Industry, Instructors</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2 Prof., 5 Assistants)</td>
<td>(1) Speaker</td>
<td>(1)</td>
</tr>
</tbody>
</table>

**Industry Input (Please tick)**

- Financial administrative (
- Curriculum Development (
- Overseas Body Industry Listion (
- Scholarships, bursaries etc. (Planated development related with x and xx above

**Comments**

For remarks, please: "Development of Construction Education Programme in Turkey", Prof. Dr. V. Dogan Sorguç.

**Course, Titles, Descriptions**

**Indicate Text Title (if any)**

1. Introduction to construction equipment.
   - Description: See the Directory of Construction Engineering Programs, CIB W-65
   - Text: "Yapı Makinaları", Prof. S. Ersoy (3 Volumes)
2. Construction Management I
   - Description: See the Directory of Construction Engineering Programs, CIB W-65
   - Text: Notes and Various books in Turkish
3. Construction Management II
   - Description: See the Directory of Construction Engineering Programs, CIB W-65
   - Text: Various books in Turkish and in Language of each student as his
     second language (mostly English).

**Educational Programme Objectives:**

To-day's objective: Basic education of C.E. students in Construction Management and practical training in construction industry through diploma-project considering the subjects of the basic education.

Future objective: Training of managers and businessmen of the Construction Sector.

**Research (Please tick)**

- Organizational (Applied) (x) Engineering (Hard) ( )

**Research Funding (Indicate source & amount (US $))**

1500 US $ (With the exchange rate of 1981)

**Describe Nature/objectives of Research and Research Facilities (if any)**

Computer System Burroughs 3700

Are there any special features of your programme. Please indicate.

The target of the program is to contribute to the solutions of problems in the construction industry. This is also considered in the selection of research works which are carried out at all levels. It follows that university industry cooperation is continuously enforced and encouraged.
<table>
<thead>
<tr>
<th>Programme(s) offered</th>
<th>Degree</th>
<th>Degree</th>
<th>Degree</th>
<th>Diploma</th>
<th>Certificate</th>
<th>Programmes</th>
<th>Specify</th>
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<tbody>
<tr>
<td>Year Programme Established</td>
<td>2</td>
<td>2</td>
<td>unlimi</td>
<td>2</td>
<td>4</td>
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<tr>
<td>Duration (years) - length of Programme</td>
<td>2</td>
<td>2</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Enrollment</td>
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<td>2</td>
<td>indepe</td>
<td>3</td>
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<tr>
<td>Course Requirements - list number of courses needed whether thesis or not</td>
<td>2</td>
<td>2</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Scholarship, Fellowship</td>
<td>2</td>
<td>2</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Language of Instruction</td>
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<td></td>
<td></td>
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<tr>
<td>Total Number of Students Graduated</td>
<td>National 35</td>
<td>Foreign 5 (per year)</td>
<td></td>
<td></td>
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<tr>
<td>Indicate % of funding by</td>
<td>Government</td>
<td>100%</td>
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<td></td>
<td></td>
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<tr>
<td>Industry</td>
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<tr>
<td>Other (specify)</td>
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<td>50%</td>
<td>50%</td>
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</tr>
<tr>
<td>Staff Numbers: Total (Indicate #)</td>
<td>Faculty Full Time (9)</td>
<td>Part Time (5)</td>
<td>Industry,Instructors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry Input</td>
<td>Financial, Administrative (1)</td>
<td>Curriculum Development (1)</td>
<td>Scholarship, Bursaries etc. (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research - Organizational (Applied) Engineering (Hard)</td>
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<td></td>
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</tr>
<tr>
<td>Research - Funding - US $</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Research - Construction Equipment + Construction Management</td>
<td></td>
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</tr>
</tbody>
</table>

**LEHREN/ERBOT**

(P-Prüfungstisch bzw. Prüfungsvorleistung nach DPO)

Stand: 01.01.1977

<table>
<thead>
<tr>
<th>Semester</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<tr>
<td>1</td>
<td>Maschinen-</td>
<td>E-Technik</td>
<td>Bauvert.-</td>
<td>Bauvert.-</td>
<td>Bauvert.-</td>
<td>Operations</td>
<td>Operations</td>
<td>Operation</td>
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<tr>
<td>2</td>
<td>Technik</td>
<td>I</td>
<td>Technik</td>
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<td>Technik</td>
<td>Research I</td>
<td>Research II</td>
<td>Research II</td>
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<tr>
<td>3</td>
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</tbody>
</table>

**VERTEILUNG**

All Grundstudium Vorexamen
CLB - W95
Study of Construction Programmes

February 17th, 1981.

Name of Institution: Technische Universität München

Faculty/School: Fakultät für Bauingenieur- und Vermessungswesen
Address: Arcisstrasse 21, D-8000 München 2

Name, Title of Contact: Prof. Dr.-Ing. Gerald Thurner
Name, Title of Respondent:

Programmes offered: Degree Bachelor, Master, PhD, Diploma, Certificate
Specifying Part of Programme: The offered Construction Program
Year Program Established: 1964 ("C-P.") is a part of the total program for Civil Engineers ("C.E.")

Duration (years) - Length of Program: 5 years

Enrollment:
Current Part Time
Current Full Time
Other (specify) of which:
National
Foreign

Admission Requirements: "Abitur" or similar

Course Requirements - list 4 courses for basic study of C.E.
Number of courses needed: 6 courses for advanced study of C.P., about
whether thesis or not: 50% of students make a thesis.

Scholarship, Fellowship

Language of Instruction: German

Total Numbers of Students Graduated:
National - 800
Foreign - 80 (for C.P.)

Indicate % of funding by:
Government
Industry
Other (specify)

Staff Numbers: Total: 12 Faculty Full Time: 8 Part Time: 4 Industry, Instructors
Indicate No.
Speakers

Industry Impact: None

Financial Administrative ( ) Curriculum Development ( )
Societal, Research, etc ( ) Overcoming Body Industry Liaison ( )

Are there any special features of your program. Please indicate.
Name of Institution: Delft University of Technology

Faculty/School: Dept. of Civil Engineering

Address: Stevinweg 1, Delft, Holland

Name, Title of Contact: D.J. Knaap, Th. Hortemeier, D.W. Greven

Name, Title of Respondent: BAC C4. M. I.

Programmes offered:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Degree</th>
<th>Non-deg.</th>
<th>Non-deg.</th>
<th>Part of Other Programme</th>
<th>Specify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master</td>
<td>Ph.D.</td>
<td>Diploma</td>
<td>Certificate</td>
<td>Programme</td>
<td></td>
</tr>
</tbody>
</table>

Year Programme Established: 1963

Duration (years): 5

Enrollment:

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
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<tbody>
<tr>
<td>Current Part Time</td>
<td>40</td>
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<tr>
<td>Current Full Time</td>
<td></td>
</tr>
<tr>
<td>Other (specify)</td>
<td></td>
</tr>
<tr>
<td>National</td>
<td>35</td>
</tr>
<tr>
<td>Foreign</td>
<td>5</td>
</tr>
</tbody>
</table>

Admission Requirements: B.Sc.

Course Requirements:
- Several courses are needed for the programme.
- Whether thesis or not available for nationals and government scholarships are available.

Language of Instruction: Dutch

Total Number of Students Graduated: 280

Indicate if of funding by:
- Government
- Industry
- Other (specify)

Staff Numbers:
- Faculty Full Time: 4
- Faculty Part Time: 6
- Industry, Instructors: 3
- Scholarship, Fellowships, etc.: 5

Industry Input:
- Financial: Administrative, Curriculum Development, Scholarship, Fellowships, etc., Overseeing Body Industry Liaison

Comments:

- Over half of the current student enrollment fulfills the master thesis requirements within industry and other real world projects.

Course, Titles, Descriptions:
- b220: The organisation of Construction
- b221: The construction planning and decision making in civil engineering projects
- b223: Project Organisation
- b230: System and Industrial Dynamics
- Design and Constructions
- b235: Decision Analysis in Civil Engineering (all courses have text's with the same title)

- Educational Programme Objectives: Provide students with the tools and knowledge to be able to function successfully within a construction engineering environment

- Research (Please tick): Organizational (Applied) ( ) Engineering (Hard) ( )

- Research Funding (Indicate source & amount (US $)): Governmental: $150,000-- est.

- Describe Nature/objectives of Research:
  - Simulation modelling in Civil Engineering
  - Project Management
  - Design-build studies (c.a.d.)
  - Real world companies to conduct research on exciting problems

- Research Facilities (If any):
  - National building research foundation

- Are there any special features of your programme? Please indicate:
  - For everyone out of the about 200 graduating C.E. students is it possible to undertake a (minor) construction project
  - About 25 students undertake a major program
UNIVERSITY OF TECHNOLOGY

Delft, Eindhoven, The Netherlands

Programmes offered: Bachelor, Master, PhD, Diploma, Certificate Programmes (specify)

Year Programme Established: 1963
Duration (years): 3, 4, 5 (full-time)
Year of Programme: 4 years (full-time)

Enrollment:
- Full-time: 120 students, each year

Admission Requirements:
- Academic level: Bachelor of Science
- Language of instruction: English

Educational Programme Objectives:
- Bachelor's degree
- Master's degree
- PhD degree

Research Facilities:
- Laboratory, Research
- Industry, Consulting

Research Fund:
- Grant in Aid
- Industry, Consulting

Describe Nature/Objectives of Research:
- Information technology
- Construction

Are there any special features of your programme? Please indicate.
Name of Institution: Technical University of Budapest
Faculty/School: Faculty of Mechanical Engineering, Department of Business Management
Address: Division for Construction Management, Budapest, M"egy: lgy Kar 1-3.

Programme(s) offered
<table>
<thead>
<tr>
<th>Degree</th>
<th>Degree</th>
<th>Non-deg. Diploma</th>
<th>Non-deg. Certificate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor</td>
<td>Master</td>
<td>Ph. D.</td>
<td>Part of Programme</td>
</tr>
</tbody>
</table>

Year Programme Established: beginning at 1980
Duration (years): 2 years
Availability (indicate current student load):
- Part-time: 40 persons
- Full-time: Other (specify)

National Year: all cat.
Foreign Year: admission requirements
- First Univ. Degree: Univ. Degree in Mechanics, Electrical or Chemicals

Admission Requirements: - list of courses needed and thesis/project

Scholarship, Fellowship
Bursaries, etc., available

Language of Instruction: Hungarian

Total Numbers of Students Graduated: National - Foreign - Research

Funding: Government - Administration 100% - Scholarship 100% - Research 50%

Industry: (Indicate %) - Faculty Full Time (1) - Part time (2) Industry, Instructors, Speakers (3)

Staff Numbers: Totals contemplated only: 1/3

Industry Input: Financial Administrative (1) - Curriculum Development (2)

Course, Titles, Descriptions: Financial Administrative (1) - see attached

Educational Programme Objectives: to train experts in a high level for industrial companies, specializing in construction management, organisation and economy

Research: Organisational (Applied) (1) - Engineering (Hard) (2)

Research Funding: (Indicate source and amount (US$))

Research Facilities: (Describe briefly if any)

Publications by Programme - only those that can be purchased (do not list articles in publications or out of print)

( ) Please check if interested in having above listed in National Technical Information Service for worldwide distribution. (Separate instructions still follow on procedures for submission.)
<table>
<thead>
<tr>
<th>I. General Sub-Subject</th>
<th>II. Special Sub-Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. General Policy</td>
<td>1. Trade Law</td>
</tr>
<tr>
<td>2. Accounting</td>
<td>2. Investment Law</td>
</tr>
<tr>
<td>3. Construction law</td>
<td>3. Investment Policy</td>
</tr>
<tr>
<td>5. Planning and Control of Quality</td>
<td>5. Diploma Project</td>
</tr>
<tr>
<td>6. Financial, Costing and Accounting Management</td>
<td></td>
</tr>
<tr>
<td>7. Economy of Industry</td>
<td></td>
</tr>
<tr>
<td>8. Information Systems</td>
<td></td>
</tr>
<tr>
<td>9. Theory and Methodology of Decision</td>
<td></td>
</tr>
<tr>
<td>10. Theory and Techniques of Management</td>
<td></td>
</tr>
<tr>
<td>11. System Analysis</td>
<td></td>
</tr>
<tr>
<td>12. System Analysis</td>
<td></td>
</tr>
</tbody>
</table>
Industry Input: Financial Administrative ( ) Curriculum Development (Please tick) Scholarship, Bursaries, etc (X) Overseeing Body: Industry Liaison ( ) 

Course, Title, Descriptions: see attached

Educational Programme Objectives: "To train contractors specializing in advanced construction techniques and their organization and economic aspects."
Research: Organizational (Applied) (X) Engineering (Hard) ( )

(Please Tick)

Research Funding:
(Indicate source and amount (US$))

Describe Nature/objectives of Research: Organization, some operations, research techniques, materials.

Research Facilities:
(Describe briefly if any)

Publications by Programme - only those that can be purchased (do not list articles in publications or out of print)

( ) Please check if interested in having above listed in National Technical Information Service for worldwide distribution. (Separate instructions will follow on procedures for submission.)

---

Name of Institution: Technical University of Budapest
Faculty/School: Faculty of Architecture, School of Contractor Experts
Address: Molybdaen rakpart 1-3, Budapest

Name, Title of Contact: Dr. MIL NAGY Chairman of the Course
Name, Title of Respondent:

Programme/s offered
Bachelor Degree
Master Degree
Ph. D.
Non-deg. Diploma
Non-deg. Certificate
Part of Other Programme Specify

Year Programme Established: 1965
Duration (years) - length of Programme: 2
Availability (Indicate current student no) Part-time
Full-time

National Year
Foreign

Admission Requirements: First Univ. Degree:

Degree in Architecture or Civil Engineering

Course Requirements - list of courses needed and thesis/project
Scholarship, Fellowship
Bursaries, etc. available

Language of instruction: Hungarian

Total Numbers of Students Graduated
National 348
Foreign 2

Funding: Administration Scholarship Research
Government 100 100 100
Industry (Indicate %) 60

Staff Numbers: Totals
Faculty Full Time ( ) Part time ( ) Industry, Instructors, Speakers ( ) 7 6
### Subjects

<table>
<thead>
<tr>
<th>Subject</th>
<th>Semester</th>
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<tbody>
<tr>
<td>New Building Materials</td>
<td>1</td>
</tr>
<tr>
<td>Mechanization of Building Processes</td>
<td>1, and 2</td>
</tr>
<tr>
<td>Mathematical Economy of Building</td>
<td>1, and 2</td>
</tr>
<tr>
<td>Civil Engineering in Building</td>
<td>1, and 2</td>
</tr>
<tr>
<td>Safety of the Site</td>
<td>1</td>
</tr>
<tr>
<td>Contracts and Law in Construction</td>
<td>1</td>
</tr>
<tr>
<td>Advanced Building Technologies</td>
<td>2, 3, and 4</td>
</tr>
<tr>
<td>Advanced Trade Technologies</td>
<td>2, 3, and 4</td>
</tr>
<tr>
<td>Advanced Processes in Organization</td>
<td>2, 3, and 4</td>
</tr>
<tr>
<td>Introduction to the Computer Techniques</td>
<td>3</td>
</tr>
<tr>
<td>Transport and Material Management of Construction</td>
<td>3</td>
</tr>
<tr>
<td>Technologies of Concrete Structures</td>
<td>3</td>
</tr>
<tr>
<td>Problems of Technology and Organization in the Industrialized Prefabrication</td>
<td>4</td>
</tr>
<tr>
<td>Introduction to the Theory of Organization</td>
<td>4</td>
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<tr>
<td>Light-Weight Building Systems</td>
<td>4</td>
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<tr>
<td>Development and Efficiency of the Construction</td>
<td>4</td>
</tr>
<tr>
<td>Advanced Technologies in Mechanical and Electrical Systems for Building</td>
<td>4</td>
</tr>
</tbody>
</table>
Industry Input Financial Administrative ( ) Curriculum Development
(Please tick) Scholarship, Bursaries, etc (x) Overseeing Body Industry Liaison (x)

Course, Titles, Descriptions
see attached

Indicate Text Title (if any)

Educational Programme Objectives:
- to train experts specializing in general contracting and management in domestic and export contracting
- Organizational (Applied) ( ) Engineering (Hard) ( )

Research Funding
(Indicate source and amount (US$) --

Describe Nature/objectives of Research

Research Facilities
(Describe briefly if any)

Publications by Programme - only those...

Cycled text and summaries on selected topics / available on request from the Institute/

Please check interested in having above listed...

Name of Institution Institute of Postgraduate Studies at E. H. U. Economics

Faculty/School School of Economics, Experts, General Contractors Course / with specialization in domestic and export contracting

Address 1075 L. 1H31 Budapest HUNGARY

Name, Title of Contact dr. Jando G.S. ... Chairman of Building Committee of the above course

Name, Title of Respondent Dr. Papp László, Secretary of the same Committee

Programmes offered Degree Degree Degree Non-deg. Non-deg. Part of Other
Bachelor Master Ph.D. Certificate Programme Specified

Year Programme Established 1970

Duration (years) - length of Programme 2 to 3 years

Availability (indicate current student status)
Part-time 30 persons 3. sem.
Full-time 1. "
Other (specify)

National
Foreign all nationals

Admission Requirements First Univ. Degree
Course Requirements - list of courses needed and thesis/project + 2 years practice

Scholarship, Fellowship The tuition fees of those students sponsored by their company are paid by their employer.

Language of Instruction Hungarian

Total Numbers of Students Graduated National - Foreign -
Administration Scholarship Research

Funding: The Institute is self supporting

Industry (indicate %)

Staff Numbers: Total Faculty Full Time ( ) Part Time ( ) Industry, Instructors, Speakers ( )

Note: "master's degree"
<table>
<thead>
<tr>
<th>Subjects</th>
<th>Domestic Export Specialization</th>
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<tbody>
<tr>
<td>1. Theoretical Subjects</td>
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<tr>
<td>1.a Economic Policy and Planning</td>
<td>+</td>
</tr>
<tr>
<td>1.b Current problems of economics grew</td>
<td>+</td>
</tr>
<tr>
<td>1.c Technical Progress</td>
<td>+</td>
</tr>
<tr>
<td>1.d Development Economic and World Economy</td>
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</tr>
<tr>
<td>1.e Economic Relations with Developing Countries</td>
<td>+</td>
</tr>
<tr>
<td>2. Methodology</td>
<td>+</td>
</tr>
<tr>
<td>2.a System Analysis</td>
<td>+</td>
</tr>
<tr>
<td>2.b Calculation of Economic Efficiency</td>
<td>+</td>
</tr>
<tr>
<td>2.c Harmonization of Interest / inter-company diplomacy</td>
<td>+</td>
</tr>
<tr>
<td>2.d Accounting and Financial of Companies in G.C.</td>
<td>+</td>
</tr>
<tr>
<td>2.e Planning Organization and the Management of Investments</td>
<td>+</td>
</tr>
<tr>
<td>2.f Techniques of Foreign Trade</td>
<td>+</td>
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<tr>
<td>2.g International Forwarding and Transporting Survance</td>
<td>+</td>
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<tr>
<td>3. G.C. E.</td>
<td>+</td>
</tr>
<tr>
<td>3.a Business and Legal Environment for G.C.</td>
<td>+</td>
</tr>
<tr>
<td>3.b General Contracting Law</td>
<td>+</td>
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</tbody>
</table>
Dublin Institute of Technology

School of Architecture, Surveying & Building
College of Technology, Bolton Street, Dublin 1, Ireland

Name: Kevin Fox, Head of School, B Arch, FRSA, ARCA
Name: Des D Oborne, P.R.I.C.S., F.C.I.D., Head of Dept of Surveying & Building

Programme: Construction Economics Diploma/B Sc. (Surg).


Construction Technician Diploma


Year Program Established: 1968
Duration (Year) = Length of Programme: 4 (Full Time) 1985 3 (Full Time)

Enrolment:

Current Part Time: 48
Current Full Time: 187
Other: 99
Other (Specify of which):

Nationality:

Generally Irish, occasionally from Overseas.

Admission Requirements:
University entrance/equivalent.

Course Requirements: List mode(s) of course work to be taken.
11 and Final Thesis 10

Scholarship, Fellowships, etc. Available:
State Student grants.
Local Authority & other scholarships.

Language of Instruction:
English or Irish

Total Numbers of Students Graduating:
Currently Average per annum: 20
(Degree Level)

Indicate % of Graduating by Degree:
Administration 100
Scholarship 10
Research

Staff Numbers:
(Indicate %)

Indust, Full Time 27 Part Tim 23 Industry, Lecturers
Speakers 49

Industry Input (Please tick):
Financial Administration ( ), Cost Estimating Development ( ), S. H. Develop, Dept., etc., ( ) Other Industry- University

Comments:
The College Diploma in Construction Economics is of degree-level since establishment and recognised by the Royal Institution of Chartered Surveyors and Institute of Building. The degree of Bachelor of Science (Surveying) of University of Dublin is awarded in parallel, since 1977, without further examination.

Educational Program Objectives: C. B. D. R. Sc. (Surv) - qualification in Construction Management with Quantity Surveying option.

C.T.D. Diploma - qualification in Middle Management for Construction Industry.

Research (Please tick): Professional and Industrial sources - varies according to project.

Research Funding (Indicate source & amount (inc. $)):

Describe Nature/Subject of Research and Research Facilities (If any): Construction Management, economic and organisational aspects, Financial Administration in conjunction with University and State Research Institutes (An Foras Forbartha - National Institute for Physical Planning and Construction Research).

Are there any special features of the programme? Please indicate.
**Study of Construction Programmes**

**Name of Institution:** UNIVERSITY OF TRONDHEIM - NORWEGIAN INSTITUTE OF TECHNOLOGY

**Faculty/School:** CIVIL ENGINEERING DEPARTMENT

**Address:** 7034 TRONDHEIM - NTH, NORWAY.

**Name, Title of Contact:** PROFESSOR DR. ENG. REIDAR HUGSTED

**Name, Title of Respondent:** SAME

**Programme(s) offered:**

<table>
<thead>
<tr>
<th>Degree</th>
<th>Degree</th>
<th>Degree</th>
<th>Non-deg.</th>
<th>Non-deg.</th>
<th>Part of Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor</td>
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<td>Ph.D</td>
<td>Diploma</td>
<td>Certificate</td>
<td>Programme</td>
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<table>
<thead>
<tr>
<th>Year Programme Established</th>
<th>44</th>
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<tbody>
<tr>
<td>Duration (years) - length of Programme</td>
<td>25</td>
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<tr>
<td>Enrollment</td>
<td></td>
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<tr>
<td>Current Part Time</td>
<td>44</td>
</tr>
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<td>Current Full Time</td>
<td>25</td>
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<tr>
<td>Other (specify) of which</td>
<td></td>
</tr>
<tr>
<td>National</td>
<td>20</td>
</tr>
<tr>
<td>Foreign</td>
<td>0</td>
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</table>

**Admission Requirements:**

STANDARD CERTIFICATE OF SECONDARY EDUCATION WITH SPECIALIZATION IN MATHEMATICS, PHYSICS AND CHEMISTRY

THESEIS (DIPLOMA) IS OBLIGATORY. 15 COURSES IN FIRST PART OF STUDY. 2 YEARS. ABOUT 12-13 COURSES IN SECOND PART 1½ YEAR. MASTER REQUIRES 3 COURSES AND THESEIS

15 AVAILABLE TO ALL STUDENTS AS SCHOLARSHIPS AND LOANS FROM STATE STUDY BANK

**Language of Instruction:**

- English

**Course Requirements - list number of courses needed:**

<table>
<thead>
<tr>
<th>Thesis</th>
<th>Engineering Year</th>
</tr>
</thead>
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<tr>
<td>15</td>
<td>15</td>
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**Total Numbers of Students Graduated:**

<table>
<thead>
<tr>
<th>Year</th>
<th>National</th>
<th>Foreign</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

**Indicate % of funding by:**

<table>
<thead>
<tr>
<th>Administration</th>
<th>Scholarship</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>100</td>
<td>80</td>
</tr>
</tbody>
</table>

**Staff Numbers:**

<table>
<thead>
<tr>
<th>Faculty Full Time</th>
<th>Part Time</th>
<th>Industry, Instructors</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

**Industries:**

<table>
<thead>
<tr>
<th>Financial Administrative</th>
<th>Curriculum Development</th>
<th>Overseeing Body Industry Liaison</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>100</td>
<td>20</td>
</tr>
</tbody>
</table>

**Research (Please tick):**

- Organizational (Applied) (X)
- Engineering (Hard) (X)

**Research Funding (Indicate source & amount (US $)):**

- FROM GOVERNMENT WITH SOME ASSISTANCE FROM INDUSTRY. (10 - 15 000 $ PER YEAR MAX).

**Describe Nature/objectives of Research and Research Facilities (if any):**

- TO DEVELOP BUILDING AND CONSTRUCTION CONSTRUCTION METHODS.
- TO DEVELOP CONSTRUCTION PLANNING METHODS TO DEVELOP MANAGING METHODS IN BUILDING AND CONSTRUCTION.
- ONLY OFFICES. NO LABS. COMPUTER CAPACITY IS AVAILABLE.

**Are there any special features of your programme. Please indicate:**

- MOST THESIS WORK ARE DONE IN COLLABORATION WITH CONTRACTING COMPANIES OR GOVERNMENT AGENCIES DOING BUILDING AND CONSTRUCTION WORK. STUDENTS MAY WORK ON SITES TO GET INFORMATION, GATHER MATERIAL AND TO ANALYZE PROBLEMS.
THE THIRD DEGREE OF DR. TECHN. IS SIMILAR TO THE DR. OF
SCIENCE DEGREE.
A MASTER THESIS IN CONSTRUCTION ENGINEERING REQUIRES THE
STUDENT TO GO THROUGH CERTAIN COURSES COVERING PROJECT
MANAGEMENT, CONSTRUCTION ENGINEERING (HEAVY CONSTRUCTION)
AND BUILDING TECHNIQUES. ALSO PROJECT WORK MAY BE INCLUDED.
THE TOTAL PROGRAM COVERED BY THE DIVISION OF CONSTRUCTION
ENGINEERING COVERS THREE BASIC COURSES AND THREE ADVANCED
COURSES.
THE NORWEGIAN INSTITUTE OF TECHNOLOGY IS FINANCED BY THE
GOVERNMENT. RESEARCH MONEY FROM OTHER SOURCES ARE AVAILABLE.
STUDIES ARE FREE OF TUITION.
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5 Mechanics, Strength of materials, Theory of elasticity, Statics, dynamics
and stability of structures
6 Soil mechanics and foundations
7 Reinforced concrete and ci structures
8 Civil, industrial and agricultural buildings
9 Metal structures
10 Civil engineering technology
11 Engineering economy and legislation
12 Foreign languages

Educational Programme Objectives:

Research ( )
Organizational (Applied) ( )
Engineering (Hard) ( )
(please tick)

Research Funding
(Indicate source & amount (US $))
217,000 $
640,000 $

Describe Nature/objectives of Research:

- Structural building systems, new civil engineering technologies for civil
  industrial and agricultural buildings, modern methods for engineering
  analyses, management and economy

Research Facilities
(Describe briefly if any)
- Specialization of researchers and teachers at other Romanian and
  foreign institutes (1 month-1 year)
- National research in Romania and abroad
- Co-operation with building enterprises

Publications by Programme - only those
that can be purchased (do not list articles
in publications or out of print)

Note: Manuals and technical literature for
above mentioned courses and others

( ) Please check if interested in having above listed in National Technical Information Service
for worldwide distribution. (Separate instructions will follow on procedures for submittal)

1) Practice week

(continued)
Study of Construction Programmes

February 17th, 1981.

Name of Institution: Building Economics & Construction Management

Faculty/School: Chalmers University of Technology

Address: S-412 96 GÖTEBORG

Sweden

Name, Title of Contact: Yngve Hammarlund, Prof. (head) or Hans C. Björnsson, Assoc. Prof.

Name, Title of Respondent: Hans C. Björnsson, Assoc. Prof.

Programme(s) offered: Degree Bachelor Master Ph.D Diploma Certificate Programme Other

Year Programme Established: 1976 (current curriculum)

Duration (years) - length of Programme: 4.5 4

Enrollment:

Current Part Time: 2

Current Full Time: 40 4

Other (specify) of which:

National: 90%

Foreign: 10% 0%

Admission Requirements: Highschool/MCE for the PhD degree

Course Requirements - list number of courses needed: 9 courses

whether thesis or not: The school has a general thesis requirement

Scholarship, Fellowship, Bursaries, etc. available: National Foreign

Language of Instruction: Swedish

Total Numbers of Students Graduated:

Indicate % of funding by National Foreign

Administration Scholarship Research

Government: 100% 100% 100%

Industry: 100%

Other(specify): 0%

Staff Numbers: Totals (Indicate F’s)

Faculty Full Time (3) Part Time ( ) Industry, Instructors Speakers (8)

Industry Input (Please tick)

Financial Administrative ( ) Curriculum Development ( )

Scholarship, Bursaries etc. ( ) Overseasing Body Industry Liaison (x)

Comments: The construction programme is one of four optimal programs in the School of Civil Engineering towards the degree "civilingenjor" which is a four year program.

(eq. to MEE)
<table>
<thead>
<tr>
<th>Programme/s offered</th>
<th>Degree</th>
<th>Degree</th>
<th>Non-deg.</th>
<th>Non-deg.</th>
<th>Part of Other</th>
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</thead>
<tbody>
<tr>
<td>Year Programme Established</td>
<td>Bachelor</td>
<td>Master</td>
<td>Ph.D</td>
<td>Diploma</td>
<td>Certificate</td>
</tr>
<tr>
<td>Duration (years) - length of Programme</td>
<td>4</td>
<td>8</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Enrollment</td>
<td>Current Part Time</td>
<td>5 %</td>
<td>Current Full Time</td>
<td>95 %</td>
<td>Other (specify)</td>
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<td>National</td>
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<td></td>
<td>Foreign</td>
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<tr>
<td>Admission Requirements</td>
<td>Higher school certificate</td>
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<tr>
<td>Course Requirements - list number of courses needed whether thesis or not</td>
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<tr>
<td>Scholarship, Fellowship</td>
<td>Bursaries, etc. available</td>
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<tr>
<td></td>
<td>Very few</td>
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<td>Language of Instruction</td>
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<tr>
<td>Total Numbers of Students Graduated</td>
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<td>50</td>
<td>Foreign</td>
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<td>Scholarship</td>
<td>Research</td>
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<td></td>
<td></td>
<td>Government</td>
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<td>Industry</td>
<td>5</td>
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<tr>
<td></td>
<td>Other (specify)</td>
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<tr>
<td>Staff Numbers: Totals (Indicate F%)</td>
<td>Faculty Full Time (F)</td>
<td>3</td>
<td>Part Time (P)</td>
<td>1</td>
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<td></td>
<td>Industry, Instructors</td>
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<tr>
<td></td>
<td>Speakers</td>
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<tr>
<td>Industry Input (Please tick)</td>
<td>Financial Administrative (F)</td>
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<td></td>
<td>Curriculum Development (C)</td>
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<td></td>
<td>Scholarship, Bursaries etc. (S)</td>
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<td></td>
<td>Overseeing Body Industry Liaison (L)</td>
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<tr>
<td>Comments</td>
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<tr>
<td>Course, Titles, Descriptions</td>
<td>Indicate Text (only)</td>
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</tr>
<tr>
<td>1. Construction management and general housing construction</td>
<td>Construction process in society</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>The project work</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>The purchasing</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>The financing</td>
<td></td>
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<tr>
<td>2. Production and cost monitoring in construction industry</td>
<td>The calculation</td>
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<td></td>
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<tr>
<td></td>
<td>The monitoring in production phase</td>
<td></td>
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<tr>
<td></td>
<td>The local management on building site</td>
<td></td>
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<tr>
<td></td>
<td>The general conditions of production</td>
<td></td>
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<tr>
<td></td>
<td>Computer assistance</td>
<td></td>
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<tr>
<td>3. Real estate management</td>
<td>The management law</td>
<td></td>
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<tr>
<td></td>
<td>The assessment</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Maintenance and repairs etc.</td>
<td></td>
<td></td>
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<tr>
<td>Educational Program Objectives:</td>
<td></td>
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<tr>
<td></td>
<td>Designing production processes adapted to the conditions on the building sites</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Planning and managing work in the production of buildings, plants, transport systems and construction</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Research Field (Please tick)</td>
<td>Organizational (Applied) (x) Engineering (F)</td>
<td></td>
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<tr>
<td>Research Funding</td>
<td>Swedish Building Research Institute $ 100,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(Indicate source &amp; amount (US $))</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Describe Nature/ objectives of Research and</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Research Facilities (If any)</td>
<td>Computers</td>
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</tbody>
</table>
| Are there any special features of your programme? Please indicate.
### SUMMARY OF COURSES FOR CIVIL ENGINEERING STUDENTS

<table>
<thead>
<tr>
<th>Course</th>
<th>Year</th>
<th>Status</th>
<th>Lectures (h)</th>
<th>Exercises (h)</th>
<th>Number of Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Construction Industry and the Economy</td>
<td>1</td>
<td>Compulsory</td>
<td>18</td>
<td>12</td>
<td>140</td>
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<tr>
<td>(b) Building Economics</td>
<td>3</td>
<td>Compulsory</td>
<td>30</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>(c) Construction Management</td>
<td>3</td>
<td>Optional</td>
<td>24</td>
<td>54</td>
<td>60</td>
</tr>
<tr>
<td>(d) Law for the Construction Industry</td>
<td>4</td>
<td>Optional</td>
<td>24</td>
<td>12</td>
<td>50</td>
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<tr>
<td>(e) Property Management</td>
<td>4</td>
<td>Optional</td>
<td>24</td>
<td>12</td>
<td>50</td>
</tr>
<tr>
<td>(f) Planning of Rock Blasting Operations</td>
<td>4</td>
<td>Optional</td>
<td>12</td>
<td>36</td>
<td>50</td>
</tr>
</tbody>
</table>

(a) Construction Industry and the Economy
The first course encountered by the students is intended to provide an elementary introduction to the economic links between the construction industry and society as a whole. Thus a broad coverage of the construction process, market conditions for the industry and government means of control is presented. Half the course is devoted to the fundamentals of the economic theory.

(b) Building Economics
In their third year, all students participate in a course that emphasizes management and economic control in construction projects, from feasibility studies to operational planning and estimating for the contractor. Exercises deal mainly with the application of planning and estimating methods. A wide range of subjects may also be chosen for seminar papers, based on computerized information retrieval.

(c) Construction Management
Another third-year course offers a more specialized treatment of the construction phase together with preceding negotiations. Activities of the construction firm are analysed. An overview of construction methods and typical problems of occupational health and safety in the industry is given.

(d) Law for the Construction Industry
A number of legal subjects with special relevance to the construction industry are developed within this course: the structure of building legislation, labor market laws, the law of contract and applications of standard agreements and contracts.

<table>
<thead>
<tr>
<th>Language of Instruction</th>
<th>Swedish</th>
<th>Swedish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Numbers of Students Graduated</td>
<td>National 90</td>
<td>Foreign 20</td>
</tr>
<tr>
<td>Indicate % of funding by</td>
<td>Government 100</td>
<td>Administration</td>
</tr>
<tr>
<td>Industry 100</td>
<td>Scholarship</td>
<td></td>
</tr>
<tr>
<td>Other(specify) 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff Numbers: Totals (Indicate #s)</td>
<td>Faculty Full Time (3) Part Time (3) Industry,Instructors 00</td>
<td></td>
</tr>
<tr>
<td>Industry Input (Please tick)</td>
<td>Financial, Administrative ( ) Curriculum Development ( ) Scholarship, Bursaries etc. ( ) Overseeing Body Industry Liaison ( )</td>
<td></td>
</tr>
</tbody>
</table>

Comments: 2) 1 point = 1 effective week of studies

Research = Organizational (Applied) Research Funding = Swedish Council for Building Research
(e) Property Management

Recent emphasis on life cycle costs and the existing stock of buildings has prompted the creation of a course that deals with legal and economic aspects of property management, including maintenance planning.

(f) Planning of Rock Blasting Operations

A vital issue in Swedish construction is efficient planning and performance in rock blasting operations. Methods and equipment are taught in this course.

The postgraduate program

Higher technical education above the degree of Civilingenjör is uniform in Sweden; nominally, there is a four-year education leading to the degree of Teknologe Doktor. About half the time is devoted to courses, and the remainder is spent on the dissertation, which has to be published and defended in public.

Seminars on various research topics are held by the Department about five times each year. Otherwise, there are no fixed courses except set lists of literature, but without any formal teaching, due to limited resources and the small number of postgraduate students. Actually, co-operation with the University of Stockholm and the Stockholm School of Economics makes it possible to follow courses there, a possibility which is used by the majority of research students.

In most cases, research is funded by the Swedish Council for Building Research. Practically all research work is more or less closely tied to dissertation projects. Recent dissertations concern integrated systems for planning and estimating in the construction firm (U. Danielson) and government support of housing rehabilitation (J. Brücher).

Ongoing research includes a project on the influence of user behavior on energy consumption in single-family housing (E. Lundström).

New courses during the academic year 1981-82:

<table>
<thead>
<tr>
<th>Year</th>
<th>Status</th>
<th>Lectures (h)</th>
<th>Exercises (h)</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>(g)</td>
<td>Project Management</td>
<td>4</td>
<td>Optional</td>
<td>18</td>
</tr>
<tr>
<td>(h)</td>
<td>Business Administration</td>
<td>4</td>
<td>Optional</td>
<td>24</td>
</tr>
</tbody>
</table>
Course, Titles, Descriptions
Indicate Text Title (if any)

A. Courses for all Students:
1. See. Engineering Economy 1 2/0
2. See. Engineering Economy 2 2/1
3. See. Engineering Project Management 2/2
4. See. Project Management 2/2
5. See. Construction Management 2/2
6. See. Project Management 2/2

B. Courses for Specialisation:
6. See. Special Construction Methods 2/1
6. See. Engineering Project Management 2/1
6. See. Construction Management 2/1
6. See. Design Management 2/1
6. See. Legal Aspects 1 2/1
6. See. Operations Research 2/1
6. See. Economics 1 2/1
6. See. Project Management 2/1
6. See. Managing Construction Business 2/1
6. See. Legal Aspects 2 2/1
6. See. Operations Research 2/1
6. See. Economics 2 2/1

Educational Programme Objectives:
A continuous training of all Civil Engineering Students at the undergraduate level in the first 6 Semesters, followed by one year of specialisation in the field of Project and Construction Management of a small number of students at the masters level.

Research (Please tick)
- Organizational (Applied) ( ) Engineering (Hard) ( )

Research Fundings (Indicate source & amount (US $))
- University and Government Funds
- Industry and Special Funds

- Rules to Design Project organisations
- Methodology for Problem Solving in Engineering
- Management of Large Projects
- Cost-Benefit Analysis Techniques in Engineering
- Micro Computers in Construction Management

Are there any special features of your programme. Please indicate.

Comments
**Study of Construction Programme**

**February 17th, 1981.**

**Name of Institution:** Heriot-Watt University, Edinburgh, U.K.

**Faculty/School:** Department of Building, Faculty of Engineering.

**Address:** Chambers Street, Edinburgh EH1 3HD.

**Name, Title of Contact:** Professor V. R. Torrance

**Programmes offered:**

<table>
<thead>
<tr>
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<td>Year Programme Established</td>
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<td>1977</td>
<td>1972</td>
<td>1977</td>
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<td>Duration (years) - length of Programme</td>
<td>4 yrs</td>
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</table>

**Admission Requirements:**

- Maths, Non-Deg. Non-Maths
- Chemistry, Non-Deg. M.A.
- Physics, Non-Deg. M.A.
- Other (specify) M.A.

**Course Requirements - List number of courses needed:**

<table>
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<th>Degree</th>
<th>72</th>
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<td>SRC &amp; Univ. Training</td>
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<td>Scholarships</td>
<td>Bursaries</td>
<td>Grant, Grant, Grant,</td>
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**Language of Instruction:** English

**Total Numbers of Students Graduated:**

<table>
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<th>Total</th>
<th>National 32</th>
<th>Foreign 10</th>
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<td>100%</td>
<td>40%</td>
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<td>Part Time (10)</td>
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<td>Industry, Instructors</td>
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<td>Research Facilities (if any)</td>
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</table>

**Comments:**

- R.E. (Hon.) in Building Technology & Management
- R.E. (Hon.) in Building Economics & Quantity Surveying
- Running but not included in form
- M.E. in Construction Management
- M.E. in Acoustics, Noise and Vibration is running but not included
- Ph.D. is by research alone, resulting in the submission of a thesis.
- The Ph.D. candidates listed are only those in Construction Management.

---

**Educational Programme Objectives:**

- Mainly the preparation of managers and senior managers for the construction industry. There are 6 others in allied areas.

**Research (Please tick):**

- Organisational (Applied) ( )
- Engineering (R&D) ( )

**Research Funding:**

- U.K. Science Research Council
- Total £100,000

**Describe Nature/objectives of Research and Research Facilities:**

- a) Motivation of Construction Workers.
- b) Computer Management of Maintenance.
- c) Selection and personality matching processes for professional personnel.

**Are there any special features of your programme? Please indicate:**

- In the M.E. (Construction Management) programme there is a somewhat unique content of industrial psychology with personnel management.
INSTITUTION: UNIVERSITY COLLEGE LONDON.
SCHOOL: The Bartlett School of Architecture and Planning.
CONTACT: Professor Donald Bishop 01 - 387 - 7050.
Mr. John Andrews
PROGRAM: Taught MSc. Building Economics and Management.
COURSE: 1 year full-time.
2 years part-time.
ENROLLMENT: Full-time - 8
Part-time - 4
National - 8 "Overseas" - 4
ADMISSION: First Second Class Honours Degree or equivalent or RIBA Part II.
(N.C.I.O.B. with qualifying exam).
COURSE REQUIREMENTS: Four course units plus a dissertation.
SCHOLARSHIPS: Science Research Council grants.
LANGUAGE OF INSTRUCTION: English.
FACULTY: Full-time - 30
ACADEMIC STAFF: Part-time - 48
STAFF: Occasional - many.
COURSE TITLES: Building Economics and Management is concerned with the
construction industry as a whole and with the economic
management of projects and programmes.
OBJECTIVES: The programme has been designed to provide:
- a specialist professional course within the initial training
  of an architect, builder or engineer
- an advanced academic course for university teachers
- a research training course
- a mid-career course for applicants who wish to keep
  up-to-date with professional developments.
Students are selected from a variety of academic,
professional and national backgrounds.
RESEARCH: Applied economics.
RESEARCH FUNDING: Mostly by central government.
RESEARCH OBJECTIVES: To study building as an economic system: recent work has
concentrated on the capacity of the industry, its response
to demand, and on aspects of health and safety.

Donald Bishop,
Professor of Building.
May, 1981.
Study of Construction Programmes

Name of Institution: UNIVERSITY OF LIVERPOOL

Faculty/School: Department of Building Engineering,
address: P.O. Box 147, Liverpool L69 3BX

Name, Title of Contact: Mr. B. Whitehead,
Name, Title of Respondent: Senior Lecturer.

Programmes offered: Degree Bachelor Master Ph.D. Non-deg. Diploma Non-deg. Certificate Part of Other

<table>
<thead>
<tr>
<th>Year Programme Established</th>
<th>Duration (years) - length of Programme</th>
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Enrollment:
- Current Part Time: -
- Current Full Time: 88 1 0
- Other (specify) of which:
  - National: 35
  - Foreign: 30

Admission Requirements:
- Degree + 3 OCE A Level + Qualification Ph.D.
- Good Honour Degree: (All register first for Masters then transfer, if recommended to Ph.D.)

Course Requirements - list number of courses needed whether thesis or not:
- As per syllabus.

Scholarship, Fellowship, Bursaries, etc. available:
- A few undergraduate scholarships and postgraduate scholarships are available.

Language of Instruction:

<table>
<thead>
<tr>
<th>Total Numbers of Students Graduated</th>
<th>National 4th</th>
<th>Foreign 8th</th>
<th>Average each year</th>
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<td>80%</td>
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<td>Industry</td>
<td>5%</td>
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<tr>
<td>Other (specify)</td>
<td>Self 10%</td>
<td>Self 75%</td>
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Staff Numbers: Totals (Indicate 's)
- Faculty Full Time (10) Part Time (0) Industry, Instructors ( )
- Speakers Occasional ( )

Industry Input:
- Financial, Administrative ( ) Curriculum Development ( )
- Scholarship, Bursaries etc. ( ) Overseas Body Industry Liaison ( )

Comments:

Course, Titles, Descriptions indicate Text Title (if any)

1. Building Construction Engineering Undergraduate courses
2. Building Services Engineering
3. (Masters and Ph.D. degrees are obtained by research rather than taught courses).

Educational Programme Objectives: To produce graduates capable of improving standards in, and acceptable to, the building construction and services engineering industries.

Research (Please tick): Organisational (Applied) ( ) Engineering (Hard) ( )

Research Funding: Science Research Council - approx. $100,000 p.a.

Describe Nature/objectives of Research:
- Acoustics - problems of structure-borne sound transmission and materials in buildings
- Materials - curing of cement pastes Energy - heat transfer

Research Facilities (if any):
- Controlled environment room
- Acoustic suite
- Materials Laboratory

Are there any special features of your programme? Please indicate.
LIST OF INSTITUTIONS INVITED

* THOSE RESPONDING ARE INDICATED BY AN ASTERISK
CANADA

Mr. H. Ahuja
Memorial University of Newfoundland
Engineering & Appl. Science
St. John's Nfld. A1C 5S7

Prof. D. H. Lee
University of Toronto
17 Wychwood Park
Toronto, Ontario M6C 2V5

V. K. Handa, Professor
Dept. of Civil Eng
University of Waterloo
Waterloo, Ont. Canada N2L 3G1

Mr. Ken Selby, Associate Professor
Dept. of Civil Eng., University of Toronto
Toronto, M5S 1A4, Canada

Paul Fazio, Ph.D. Eng.
* Professor and Director
Centre for Building Studies
Concordia University, 1455 de Maisonneuve Blvd. W.
Montreal Quebec Canada
H3G 1M8

Dr. G. Ross
Environmental Design
University of Calgary
Calgary, Alberta T2N 1N4

Prof. Eldon Fowler
Dept. of Civil Eng.
University of Alberta
Edmonton, Alberta

WEST INDIES

Univ. of the West Indies
* Dept. of Civil Engineering
St. Augustine
Trinidad & Tobago

ARGENTINA

Professor R. Humar
Echeverria 1168
Florida 1602
Argentina
Mr. G. H. Blessis
N. Carolina State Univ
Box 5993
Raleigh, North Carolina
27650

Mr. J. Borcherding
Univ. of Texas at Austin
ECJ 5.200 Architectural Eng.
Austin, Texas 78712

Mr. G. M. Brey
Capital Campus, Penn State
Middletown, Penn 17057

Mr. S. L. Bridwell
Penn State - Mont Alto
Campus
Mont Alto, Penn 17237

Mr. C. L. Burton
Kansas State Univ
Rm. 239 Seaton
Dept. Arch Eng. & Const.
Manhattan, Kansas 66502

Prof. R. D. Logcher
Dept. of Civil Eng.
Mass Inst. of Tech
Cambridge Mass
02139 U.S.A.

Dr. H.H. Graves
Const. Mgmt. Pgm.
School of Architecture
Pratt Inst.
Brooklyn New York, 11205

Dr. G. H. Albright
Dept. of Architectural Eng.
101 Eng. Unit "A:
Penn State Univ.
Univ. Park, Penn. 16802

Nathan Streitman, Chairman
Const. Mgmt.
Pratt Institut
Const. Mgmt. Programme
School of Architecture
Higgins Hall, Brooklyn NY
11205

Mr. E. Koehn
Ohio Northern University
Ada, Ohio 45810
U.S.A.

Mr. R. Kornamik
Pennsylvania State Univ.
Capitol Campus
Middletown, Penn. 17057

Mr. M. J. Long
Farleigh Dickinson Univ.
1000 River Rd.
Teanick, New Jersey 07666

Mr. D. P. Lyons
Penn State Univ.
Hazleton Campus
Hazleton, Penn 18201

Mr. D. H. Martin
Colorado State Univ
Guggenheim Hall
Fort Collins, Colorado
80523

Montgomery College
Civili Eng.
Rockwell, Maryland

Wentworth Inst. of Technology
550 Huntington Ave.
Boston, Massachusetts, U.S.A

Head Civil, New Mexico State
University
Lascrucies, New Mexico
88001

Univ. of Texas, Head of Civil
El Paso
El Passo Texas

Head Dept. of Civil Eng.
Brighan & Young Univ.
Provo, Utah 84602

Mr. L. Bell
Auburn University
* Dept. of Civil Eng.
Auburn, Alabama 36830
U.S.A.

Purdue University
Dept. of Building Const & Contracting
School of Technology, SCAA
West Lafayette, Indiana 47907

Mr. C. G. Etter
Villanova University
Dept. of Civil Eng.
Villanova, Penn. 19085
U.S.A.

Univ. of Southern Mississippi
Dept. of Const. & Architectural Tech.
Southern Station, Box 5137
Hattiesburg, Mississippi 39401

Mr. F. Gallo
The Cleveland State University
1983 East 24th St.
Cleveland, Ohio 44115
U.S.A.

Southern Missouri State College
Dept. of Industrial Education
Springfield Missouri 65803

Mr. S. Hamman
Clarkston College
Potsdam, N.Y. 13676
U.S.A.

Spring Garden College
102 East Mermaid Lane
Chestnut Hill, Penn 91922

Mr. G. A. Hazen
Ohio University
117 Eng. Bldg.
Athens, Ohio 45701
U.S.A.

Temple Univ.
Dept. of Civil Eng.
College of Eng. Tech.
Philadelphia, PA 19122

Mr. W. E. Mattis, Jr.
Pennsylvania State Univ.
Delaware County Campus
25 Yearsley Mills Rd.
Media, Penn 19063

Texas A & M University
School of Architecture
College Station Texas 77843

Mr. D. W. Halpin
Georgia Inst. of Technology
School of Civil Eng.
Atlanta, Georgia 30332
U.S.A.

Texas A & M University
College of Eng.
College Station, Texas 77843

Mr. R. B. Harris
* The University of Michigan
Dept. of Civil Eng.
Ann Arbor, Michigan 48109
U.S.A.

Virginia Polytechnic Inst.
Dept. of Bldg. Const.
College of Architecture
Blackburg, Virginia 24061

Mr. W. Hester
Dept. of Civil Eng.
Univeristy of California
Berkeley, California 94720

Kean College of New Jersey
Dept. of Industrial Studies
Union, New Jersey 07083

Mr. S. K. Jain
Southern University
Baton Rouge, Louisiana 70813

Louisiana State University
Dept. of Construction
Baton Rouge, Louisiana 70803

Mr. E. E. Johnson
South Dakota State University
Brookings, South Dakota 57006

Louisiana Tech Univ.
Dept. of Civil Eng.
Ruston, Louisiana 71272

Memphis State Univ.
* Division of Eng. Tech- Const.
Memphis Tennessee 38152

PAGE THREE
Dr. L. T. Boyer  
Dept of Civil Eng.  
Univ. of Illinois  
Urbana, IL 61801

Henry George Irwig  
Dept. of Civil Eng.  
*Case Western Reserve University  
Cleveland, OH 44106

Prof. John Fondahl  
Dept. of Civil Eng.  
Stanford Univ.  
Stanford, CA 94305

Prof. R. Tucker, Colin M. Popesen  
Dept. of Civil Eng.  
The Univ. of Texas at Austin  
ECJ 5.2  
Austin, Texas 78712

Gunter Schmidt  
Dept. of Architecture  
School of Arch & Envir. Design  
State Univ of New York at Buffalo  
Buffalo, N.Y. 14214

Prof. Jack H. Willenbrock  
Dept. of Civil Eng.  
*Penn State Univ.  
University Park P.A. 16802

Dr. David I. Cleland, Professor  
University of Pittsburgh  
1035 Benedum Hall  
Pittsburgh PA 15261

*Head, Dept. of Civil Eng.  
University of Wisconsin  
Madison, Wisconsin 53706

Prof. John Havers  
Purdue University  
Civil Eng. Bldg  
W. Lafayette  
Indiana 47907

Head, Dept. of Civil Eng.  
U. of Alaska  
Alaska, Fairbanks  
99701, U.S.A.

Director, Fails Mgmt. Inst.  
5151 Glenwood Ave.  
Raleigh, N.C.  
27612

Colorado State U.  
Head Dept. of Civil  
Fort Collins, Colorado  
80523  
(also Head, Dept. of  
Industry Science)

Dept. of Industrial Education  
& Technology  
University of Maryland Eastern  
Princess Anne, Maryland 21853

Head of Civil  
Ferris State College  
Big Rapids  
Michigan, 49307

North Dakota State University  
Fargo ND

Head, Civil, Cornell University  
Ithica, New York  
14850

Head of Dept. of C.E.  
Univ. of Tennessee  
Knoxville, Tenn  
37919

Head Industry and Technology  
E. Texas Univ. Commerce  
75428

Dept. of Architecture & Civil  
S. Illinois University  
Carbondale, 62901

Prof. J. Schaub  
Dept. of Civil Eng.  
Univ. of Florida  
Gainesville, Florida 32611

R. Larew,  
Dept. of Civil Eng.  
The Ohio State University  
Columbus, Ohio 43210
Dr. J. J. Adrian  
Bradley Univ.  
5317 N. Woodview Ave.  
Peoria, Ill 61614  

Florida International Univ.  
School of Tech, Const. Dept.  
Tamiami Campus  
Miami, Florida 33199  

California State - Fresno  
Dept. of Industrial Arts and Tech  
Fresno, California 93726  

California State Fresno  
Dept. of Industrial Arts & Tech  
Fresno California 93726  

California State Polytechnic Univ.  
School of Architecture & Environ.  
San Luis Obispo, California 93407  

Bowling Green State Univ.  
* Industrial Education & Tech.  
Bowling Green Ohio 43404  

Arizona State Univ.  
Div. of Construction  
College of Eng. & applied Science  
Temple, Arizona 85281  

Purdue University  
Civil Eng.  
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Dr. J. W. Melin  
Univ. of Illinois at Urbana - Champaign  
* 3142 Civil Eng. Bldg.  
Urbana, Ill. 61801  

Dr. J. M. Neil  
Texas A & M University  
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Dr. G. G. Peterman  
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College of Eng. & App Science  
Tempe, Arizona 85281  

Dr. L. H. Pugh  
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Capitol Campus  
Middletown Penn 17057  

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College of Eng. & Tech  
Lincoln, Nebraska 68688  

State Univ. of New York at Syracuse  
Wood Products Eng.  
Syracuse, New York 13210  

Univ. of North Carolina  
Eng. Technology  
UNCC Station  
Charlotte North Carolina 28223  

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Monroe, Louisiana 71209  

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2070 Neil Ave.  
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Stillwater, Oklahoma 74074  

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Civil Eng. Dept.  
Corvallis, Oregon 97331  

University of Washington  
Dept. of Building Construction  
College of Architecture & Urban Planning  
Seattle, Washington 98105  

Washington State University  
Constr. Mgmt.  
Dept. of Architecture  
Pullman, Washington 99164  

West Virginia State College  
Dept. of Industrial Technology Institute, West Virginia 25112  

University of Wisconsin Platteville  
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Dept. of Industrial Studies  
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Univ. of Wisconsin Stout  
School of Industry & Technology  
Menomonie, Wisconsin 54751  

PAGE FIVE
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Pittsburgh, Penn. 15215

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U.S. Military Academy
Point, NY 10996

Prof. C. J. Marshall
Director & University Architect
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Lexington, Kentucky 40506

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Grad. School of Fine Arts
Development of Architecture
Univ. of Pennsylvania
Philadelphia, Penn. 19174

Mr. H. W. Busching
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110 Lowry Hall
Clemson, South Carolina 29631

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Boulder, Colorado 80309

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Raleigh, North Carolina 27607

D. A. Halperin, Director
Univ. of Florida
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Gainesville, Florida 32611, U.S.A.

University of Houston
Dept. of Civil Tech.
Houston, Texas 77044

Indiana Univ. Purdue
University at Indianapolis
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1201 East 38th Street
Indianapolis, Indiana 46205

Iowa State University
Construction Eng.
Ames, Iowa 50010

Jackson State University
School of Industrial & Technical
1325 J. R. Lynch St.
Jackson, Mississippi 39217

John Brown University
Dept. of Building Const.
Siloam Springs, Arkansas 72761

Kansas State College of Pittsburg
Building Technology Dept.
Pittsburg, Kansas 66762

Dr. J. W. Saunders Jr.
West Virginia University
Dept. of Civil Eng.
Morgantown, West Virginia 26506

Dr. J. A. Schaefer
Loras College, Physics Dept.
1450 Alta Vista
Dubuque, Iowa 52001

Dr. G. Vannoy
University of Maryland
Dept. of Civil Eng.
College Park, Maryland 20742

Dr. C. A. Wright
Florida A & M University
Civil Eng. Tech.
Tallahassee, Florida 32307
Mr. E. L. Bidwell
Univ. of South California
Civil Eng. Dept., Los Angeles, Cal. 90007

Mr. W. H. Douglas, Jr.
University of Kansas
Civil Eng.
Lawrence, Kansas 66045
U.S.A.

G. H. Albright, Dept. of Arch. Eng.
* Penn State Univ.
101 Eng. "A": Bldg. Univ. Park PA 16802

Head, Civil
California State
Long Beach
1250 Belleflower Blvd.
Long Beach, California 90840

Prof. F. T. Smothers
Dept. of Architecture
Louisiana State Univ.
Baton Rouge, Louisiana 70803

Mr. P. Ray
Tuskegee Inst.
School of Eng.
Tuskegee Inst. Alabama

Michigan State Univ.
Bldg. Const. Programme
Dept. of Agricultural Eng.
East Lansing, Michigan 48824

J. White
School of Architecture & Urban Planning
Univ. of Wisconsin-Milwaukee
Milwaukee, WI 53201, U.S.A.

Mr. N. B. H. Benjamin
Dept. of Civil Eng.
Univ. of Missouri
Columbia, Missouri 65201

R. E. Johnson
Asst Professor, Univ. of
Michigan
Architectural Res Lab
Ann Arbor, MI 48109

Mr. S. J. Kimball
Pennsylvania State University
Altoona, Campus
Altoona, Penn 16603

M. I. Guest, Pro. Chairman
Dept. of Construction
Bradley Univ.
1501 W. Bradley Ave.
Peoria, IL 61625, U.S.A.
AFRICA

Mr. T. Olivier
Dept. of Building Science
Univ. of the Witwatersrand
Johannesburg 2001
S. Africa

A. C. Hauptfleisch
* Dept. of Building Mgmt
University of Pretoria
Pretoria, S. Africa

R. G. Sfakianos
Civil Eng. Ind. Training Bd.
* Provivate Bag 1
Gardenview 2047
S. Africa

Trevor W. Miners
National Bldg. Research Inst.
P.O. Box 395
Pretoria 0001, South Africa

Dr. M. Vorster
* Univ. of Capetown
Private Bag, Rondebosch 7700
Capetown, Republic of South Africa
KOREA

Prof. H. C. Kim
Architectural Inst. of Korea
No. 2-7 2-Ka Myung-Dong
Chung-Ku, Seoul 100, Korea

THAILAND

Pisidhi Ksrasudhi
Asian Institute of Technology
P.O. Box 2754
Bangkok, Thailand

INDIA

Prof. D. Mohan
University of Roorkee
Roorkee, U.P.
India

Director (Training)
Cement Research Institute of India
M-10 South Extension Part 11
Ring Road
New Delhi 110 049
India

SINGAPORE

* National Univ. of Singapore
Faculty of Architecture & Bldg.
Kent Ridge
Singapore 0511
Republic of Singapore

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