Collection Development
in
Industrial & Manufacturing Engineering (I&ME)

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Aviation & Engineering Librarian and Assistant Professor
Spring 1996

Overview

Introduction

The WSU Ablah Library Collection in Industrial and Manufacturing Engineering provides students and faculty in the WSU College of Engineering, especially in the I&ME Department, library access to information to support educational and research activities. The Collection also supports research, engineering consulting, and library information needs of the administrators, faculty, students, engineers, and staff at the WSU National Institute for Aviation Research (NIAR).

Programs

The College of Engineering offers two departmental majors in Industrial and Manufacturing Engineering at the bachelor level (B.S.I&E. and B.S.Mfg.E.), a master's degree (M.S.I&E.), and a doctorate (Ph.D.) degree.

The College of Engineering's undergraduate programs except the B.S.Mfg.E. are currently accredited by the American Board for Engineering and Technology (ABET), which requires the Library to provide information on the Collection during its accreditation review process and visits to the University.

Faculty in the College of Engineering and the Aviation & Engineering Librarian are members of the American Society for Engineering Education (ASEE) and its specialized groups such as the Engineering Libraries Division (ELD). Some faculty are also Research Associates of the NIAR, using its facilities for research, administration, and/or service.

At WSU it is possible for students to earn their degrees during conventional daytime classes or in evening classes. This accommodates those students who work locally in technological and other fields while pursuing their degrees. Each semester the Library's services are available before, during, and after all scheduled class periods, on weekends, and by appointment.
The bachelor's degree is the minimum academic credential required for engineering students to enter professional practice and pursue certification and/or state licensure. Graduates at this level are employed in both the public and private sectors in corporate, research, and/or field settings. Some bachelor's degree students then pursue professional credentials and or certification including licensure while employed. The library collects materials that assist such students in preparation to take relevant exams such as the FE (Fundamentals of Engineering) and PE (Professional Engineer). Other B.S. graduates may continue their studies in graduate school full or part time.

The master's degree is used to advance in professional practice and/or to begin the necessary studies for a doctorate degree. Master's students have the option of doing a thesis or a research report. Both are acquired by the Library for the Collection. These are acquired through the Graduate School and the reports are acquired by the Aviation and Engineering Librarian from the Graduate Coordinator of the I&M&E Department.

The Ph.D. degree is research-based, preparing one for a professional career in the private or public sectors. The degree also qualifies one for teaching, research, post-doctoral, or administrative positions at colleges and universities.

Students

Undergraduate students in the Department use the Collection for some assignments in engineering and other courses, as a source of material for the experimentation or demonstration required in their senior class projects, and to prepare for professional certification tests. These students also use the Collection to supplement the material presented in classes and labs or the problem exercises in their textbooks.

Graduate students use the Collection to augment courses and to support research for reports, theses, or dissertations required for graduation. Graduate Research Assistants and Graduate Teaching Assistants also assist professors in locating engineering information. Some graduate students also use the Collection in the paper or journal publication process.

The Collection also provides initial exposure to the professional literature of engineering used by students during their academic semesters and in their subsequent professional careers. These engineering information/literature sources include books, standards and specifications, periodicals, patents, government documents, technical reports, indexes and abstracts, etc.

Many students are employed locally in engineering work and use the Collection in support of company projects.
Faculty

Research in the College of Engineering is laboratory-based with occasional field testing. Most research is done with grant support or under government contract. Results are formally published in journals, presented at conferences or meetings, or reported in technical reports. Proprietary research is also done for business and industry. Graduate students often assist with faculty research, resulting in co-authored publications.

RESEARCH AND INSTRUCTION

The primary areas of faculty research and instruction are listed below. These are taken from the directory publication titled "The Wichita State University College of Engineering Faculty and Areas of Specialization" printed annually by the Dean’s Office. The listings also include capitalized department course titles with (G) indicating graduate courses. Areas of specialization are also indicated in the College of Engineering Annual Report published by the Office of the Dean of the College of Engineering and available in the Library’s Special Collections Department.

Faculty Areas of Specialization
and I&M&E Department Course Titles

Advanced Linear Programming (G)
Advanced Human Factors
Advanced Manufacturing Processes (G)
Advanced Simulation (G)
Aerospace safety
Aircraft safety
Analysis of Decision Processes
Application of optimization in manufacturing
Applied Forecasting Methods (G)
Artificial intelligence (AI) applications
Computer assisted design/computer aided manufacturing (CAD/CAM)
CADAM*
CAD/CAM/CAE
CAPP
delP cockpit design
delP computer aided design (CAD)
delP computer control of processes
delP Computer Integrated Manufacturing (CIM)
delP computer vision
delP decision analysis
delP Decision Support Systems
delP Engineering Economy
delP Engineering Graphics
delP Engineering Management
delP Engineering Management Communications (G)
delP Engineering Probability and Statistics
Environmental Hygiene Engineering (G)
Ergonomics
Expert Systems
Facilities Planning and Design
Flexible Manufacturing Systems (G)
Forecasting
Geometric Dimensioning and Tolerancing (G)
Human Factors Engineering
Human Machine Systems
Industrial Automation
Industrial Engineering
Industrial Engineering Design
Industrial Engineering Problems (G)
Industrial Engineering Workshops
Industrial Robotics
Information Systems
Inventory Systems (G)
Knowledge-Based Systems (G)
Logistics
Machine Vision
Manufacturing
Manufacturing and Robotic Systems
Manufacturing Engineering
Manufacturing Methods and Materials
Manufacturing Processes
Manufacturing Systems
Manufacturing Systems Engineering
Mathematical Programming
Metrology
Modern Techniques in Safety Engineering
Multiple Criteria Decision Making (G)
Multiple-Objective Decision Making
Network Flow Analysis
Neural Networks
Nonlinear Programming (G)
Occupational Biomechanics (G)
Operations Management
Operations Research
Optimization
Production and Inventory Control
Quality Control (QCC)
Rehabilitation Engineering
Reliability
Reliability and Maintainability Engineering
Robotics Sensors (G)
Robotics Systems
Safety
Safety Engineering
Sequencing and Scheduling (G)
Simulation
Simulation Systems
Statistical Analysis
Statistical Quality Control
Stochastic Processes and Queuing Theory (G)
Systems Engineering and Analysis
Systems Simulation
Tolerancing
Topics in Industrial Engineering
Total quality management (TQM)
Work Analysis and Design
Work measurement
Work Physiology (G)
COLLECTION GUIDELINES

1. Language emphasis:
   English is the primary language of the acquired materials. Items in other languages are considered at the request of the faculty.

2. Date of publication:
   Items with current or recent copyright years are acquired. Items with prior copyright years are acquired as needed to support present, new, or subsequent areas of research. Items containing the latest, current, or most recent information or recorded knowledge are acquired.

3. Geographical emphasis:
   Items acquired are published or produced in the United States and Europe, with occasional items from Japan, Taiwan, Hong Kong, or India. Items covering topics in Russia are acquired from European or American publishers.

4. Subject treatment emphasis:
   Graduate, research, scholarly, professional, and undergraduate level items are acquired. Biographical and popular items are selectively acquired.

5. Types of items/format emphasis:
   Reference works, monographs, treatises, periodicals, conference, congress, and symposia proceedings, society, institute, and association publications and/or papers, technical reports, standards and specifications, government documents, CD-ROM and computer tape databases, and videotapes are considered. Dissertations and theses beyond MSU's are acquired as needed. The IAMGE Department master's degree reports are acquired from the Department's graduate coordinator.

   Item formats include print/paper/hardcopy (i.e., books, documents, periodicals, reports, etc.), electronic (i.e., CD-ROM, computer tape, etc.), microfiche, and VHS videotape.

6. Chronological emphasis:
   Items of historical interest are selectively acquired, especially those with an emphasis on the history of industrial and manufacturing engineering.

7. Other emphasis:
   Items from key professional societies, institutes, and associations are acquired. Included are the Institute of Industrial Engineering (IIIE), the Society of Manufacturing Engineers (SME), and the Human Factors Society (HFS). Catalogs for these organizations are received or can be requested. The IIIE catalog includes both IIIE publications and items from
other publishers.

The SME technical papers are available in print from 1984-1988 [TX 176.865] and on microfiche for 1989 to present [microfiche 3698]. The SME papers are indexed in the SME Technical Digest [REF TS 176.865] and in the COMPENDEX*PLUS database. The SME "Book & Video Catalog" is printed annually. It lists available books published by SME and other relevant groups or publishing companies in the following categories:

- SMEH - Tool and Manufacturing Engineers Handbooks
- ASM Handbooks [on standing order as continuations]
- Machining/Grinding/Material Removal/CNC (Computer Numerical Control)
- Tool Engineering
- Forming/Fabricating/Die Design
- Automated Manufacturing/CAD/CAM
- Finishing/Painting/Powder Coating
- Manufacturing Strategies
- Plant Management/Industrial Engineering/Maintenance
- Design for Manufacturability
- Geometric Dimensioning & Tolerancing
- Quality/TQM/ISO 9000
- Continuous Improvement
- Plastics/Composites
- Manufacturing Research
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<th>SUBJECT AREA</th>
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<tr>
<td>Digital computers and digital computer programming languages</td>
<td>QA76.5-76.7</td>
<td>C</td>
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<tr>
<td>System analysis (Control theory, Mathematical optimization)</td>
<td>QA402-402.5</td>
<td>B</td>
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<tr>
<td>Technology (general, history, etc.)</td>
<td>T1-51</td>
<td>C</td>
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<td>Industrial safety, industrial accident prevention</td>
<td>T54.4-55.3</td>
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<td>Industrial engineering (General, history, project management, etc.)</td>
<td>T55.4-65.8</td>
<td>B</td>
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<tr>
<td>Applied mathematics, quantitative methods, probability theory, stochastic processes</td>
<td>T57-57.5</td>
<td>B</td>
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<td>Operations research, systems analysis</td>
<td>T57.6</td>
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<td>Simulation, Monte Carlo methods</td>
<td>T57.62-57.63</td>
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<td>Programming (Linear, nonlinear, dynamic, heuristic)</td>
<td>T57.7-57.84</td>
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<td>Network systems theory, including network analysis</td>
<td>T57.85</td>
<td>C</td>
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<td>Queueing theory, game theory, decision theory, search theory</td>
<td>T57.9-57.97</td>
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<td>Managerial control systems, Information systems, Decision support systems, management of information systems</td>
<td>T58.4-58.64</td>
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<td>Production capacity. Manufacturing capacity</td>
<td>T58.7</td>
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<td>Productivity, Efficiency</td>
<td>TS8.8</td>
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<td>Standardization</td>
<td>TS9.1-59.2</td>
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<td>Mechanization, Automation</td>
<td>TS9.4-53.5</td>
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<td>Human engineering in industry. Man-machine systems, Working environment</td>
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<td>Work measurement. Methods engineering including time and motion study, work design, etc.</td>
<td>T60-60.8</td>
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<td>Technical education, technical schools</td>
<td>T61-173</td>
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<td>Industrial research</td>
<td>T175-178</td>
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<td>Technical change</td>
<td>T193.2-174.5</td>
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<td>Industrial research and development</td>
<td>T175-185</td>
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<tr>
<td>Patents</td>
<td>T201-342</td>
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<tr>
<td>Mechanical drawing, engineering graphics</td>
<td>T351-379</td>
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<tr>
<td>Computer graphics</td>
<td>T385</td>
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<tr>
<td>Human engineering (Human factors, ergonomics)</td>
<td>TA166</td>
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<td>Man-machine systems</td>
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<td>Systems engineering</td>
<td>TA168</td>
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<td>Systems reliability (Accelerated life testing, system failures, fault location, system safety)</td>
<td>TA169-169.7</td>
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<tr>
<td>Engineering mathematics</td>
<td>TA329</td>
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<td>Standards (Collections, indexes, etc.)</td>
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<tr>
<td>Inventory control</td>
<td>TS160-163</td>
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<td>Control of production systems</td>
<td>TS155.8-170</td>
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<tr>
<td>Scheduling</td>
<td>TS157.5-158.4</td>
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<td>Automatic data collection systems (Production control)</td>
<td>TS158.6</td>
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<td>Manufacturing engineering</td>
<td>TS176-183.6</td>
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<td>Manufactures (General)</td>
<td>TS200-788</td>
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<td>Manufactures (Production management)</td>
<td>TS171-199</td>
<td>B</td>
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<td>Operations research (Simulation, Linear programming)</td>
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<td>Control engineering, Automatic control system</td>
<td>TJ 212-225</td>
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<td>Metal manufactures</td>
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