

AccessEngineering Overview

A Tour of the Site and Content

AccessEngineering provides full access to over 700 titles across all engineering disciplines, including popular handbooks and upper level textbooks.

All titles are available at no additional cost to your students through an institutional subscription.

Enhanced Book Content

McGraw Hill ACCESS Engineering

Access via McGraw Hill My account

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The award-winning engineering reference platform for academics, students, and professionals.

Search AccessEngineering here... Search ?

Browse AccessEngineering content by...

Subject Industry Course

Books Videos Spreadsheets Case Studies Other

Explore material properties using DataVis

Handbook Handbook Textbook Schaum's Textbook Code Commentary Textbook Engineering Refere...

Perry's Chemical Engineers' Handbook

Marks' Standard Handbook for Mechanical Engineers

Automatic Control Systems

Schaum's Electric Circuits

Construction Planning, Equipment, & Methods

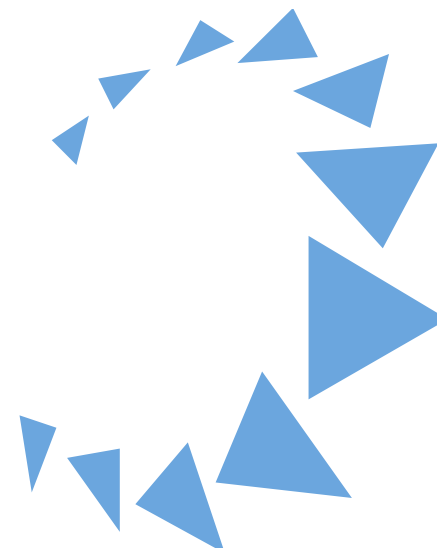
2018 International Building Code Illustrated Handbook

Water and Wastewater Engineering

Engineering Reference

View all... Handbooks Textbooks Schaum's Outlines Code Commentary Business Skills Makerspace

Top titles are displayed on the homepage, and lists are available by book type to browse through titles



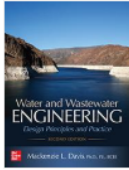
Enhanced Book Content

Instructor resources and videos are available for many titles

[See the full list of titles with instructor resources](#)

The screenshot shows the AccessEngineering interface for the book "Water and Wastewater Engineering: Design Principles and Practice, Second Edition" by Mackenzie L. Davis. The page features a search bar at the top, a navigation menu with "Within this book" selected, and a "Browse AccessEngineering content by..." section. The book's cover is displayed on the left. The main content area includes the book title, author name, ISBN (9781260132274), and publication date (2020, 2010). A "Show more" link is present. Below this, there are buttons for "Cite", "Share", "Bookmark", "Labels", "Summary PDF", and "Annotate". A red box highlights the navigation tabs: "Table of Contents", "Videos (15)", and "Resources (3)". Under the "Resources" tab, two files are listed: "9781260132274_Supplemental-Readings.zip (41.19 MB)" and "9781260132274_PowerPoint-Slides.zip (138.59 MB)". Another red box highlights the "For instructors" section, which includes a file "9781260132274_Solutions.zip (3.07 MB)". Below this, instructions are provided for accessing instructor resources, including a checklist with "Log in to your personal account on AccessEngineering" and "Request instructor rights". A final paragraph explains that once instructor rights are granted, resources can be downloaded by logging in to the personal account. On the right side, there is a "Related searches" section with a search prompt and a "Subjects" section listing "Waste engineering", "Wastewater engineering", and "Water treatment".

Enhanced Book Content



Water and Wastewater Engineering: Design Principles and Practice, Second Edition

Mackenzie L. Davis, Ph.D., P.E., BCEE

There are [other editions](#) of this item. **This is the most recent edition.**

[Show more](#) ▾

[Table of Contents](#) [Figures \(1\)](#) [Graphs \(2\)](#) [Tables \(2\)](#) [Examples \(3\)](#) [Resources \(3\)](#)

8-4. ION EXCHANGE PRACTICE

Table 8-2 Typical ranges for design data and criteria for strong acid cation and strong base anion resins

[Show table](#) ▾ | [View in context](#)

Table 8-3 Typical range of design criteria used in sizing ion exchange columns and vessels

[Hide table](#) ▴ | [View in context](#)

Parameter	Range of values	Comment
Pressure drop	35–70 kPa	135 kPa maximum
Diameter (D)	< 2.5 m	Fiberglass tanks
Height (H) of resin	≥ 0.9 m	To avoid premature breakthrough
$H:D$ of resin bed	1.5:1 to 3:1	

Sources: GLUMRB, 2003; Gottlieb, 2005; Reynolds and Richards, 1996.

[Open in new tab](#) [Download data](#)

[Share](#)

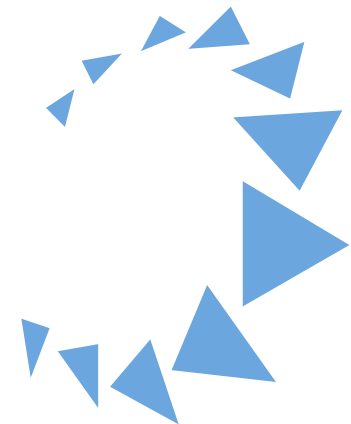
Related searches

Search AccessEngineering for other content tagged with these...

Subjects

[Hardness removal](#)
[Ion exchange resins](#)
[Pressure drop](#)
[Resin regeneration](#)
[Service flow rate](#)
[Water hardness](#)

View videos, figures, graphs, tables, and examples in each book section and share direct links to content



AccessEngineering provides real-world examples applying fundamental concepts in context.

Problem-solving tools including video tutorials and spreadsheet calculators help support student learning.

Problem-Solving Tools

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Within your selection Search AccessEngineering here... Search

Browse AccessEngineering content by... Subject Industry Course Books Videos Spreadsheets Case Studies Other

Results

Refine results by... Show me...

Subject	Everything 404,142	Books 403,041	Videos 1,012	Spreadsheets 54	Case Studies 4	Tutorials 3
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Video

10% Infill and a Bridge

This video shows an item being printed with a 10% infill and includes a bridge.

Source: 3D Printing and CNC Fabrication with SketchUP

Easily find videos, spreadsheets, and example problems with search filters

All of AccessEngineering ideal gas law Search

Browse AccessEngineering content by... Show more

Results for ideal gas law See also Save search

Refine results by... Show me... 25 50 100 items per page

Subject	Everything 1,663	Books 1,652	Videos 10	Spreadsheets 1	Case Studies 0	Tutorials 0	DataVis 0
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Chapter

6. The Ideal Gas Law

Avogadro's hypothesis states that equal volumes of gases at the same temperature and pressure contain the same number of molecules.

Source: Schaum's Outline of Thermodynamics for Engineers, Fourth Edition

Filter by Book Component

Include results for...

Titles (0)	<input type="checkbox"/>
Chapters (1,569)	<input type="checkbox"/>
Figures (4)	<input type="checkbox"/>
Graphs (9)	<input type="checkbox"/>
Tables (27)	<input type="checkbox"/>
Examples (43)	<input type="checkbox"/>

Cancel Apply filter

Dictionary

ideal gas law thermodynamics

The equation of state of an ideal gas which is a good approximation to

Problem-Solving Tools

Problem-solving videos walk step-by-step through worked examples

Other videos show equipment and processes

Video Cite Share Bookmark Labels Annotate

5.22 It is required to transmit 70 hp from a turbine by a solid circular shaft turning at 200 rpm (rev/min). If the allowable shearing stress is 45 MPa, determine the required shaft diameter.

$$P = 70 \text{ hp} \quad f = 200 \frac{\text{rev}}{\text{min}} \quad \tau_{\text{ALL}} = 45 \text{ MPa}$$

TORQUE $P = 2\pi f T$

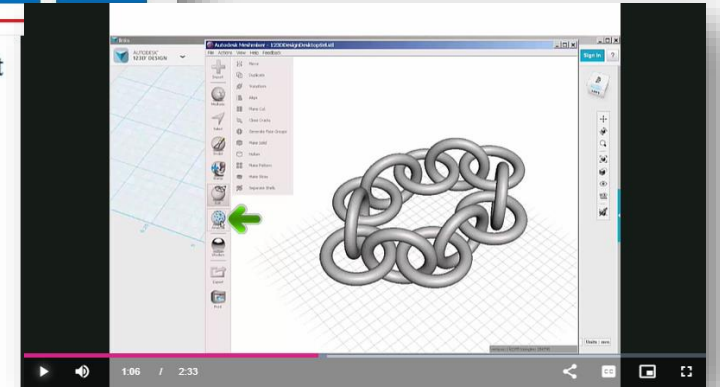
$$(70 \text{ hp}) \left(\frac{746 \text{ W}}{1 \text{ hp}} \right) = (2\pi \frac{\text{rad}}{\text{rev}}) \left(200 \frac{\text{rev}}{\text{min}} \right) \left(\frac{1 \text{ min}}{60 \text{ sec}} \right) T$$
$$T = 2,493.32 \text{ N}\cdot\text{m}$$

0:54 / 1:51

Show transcript

Source:
Schaum's Outline of Strength of Materials, Seventh Edition
5. Torsion

View video in context



Problem-Solving Tools

AutoSave Off | Venturi_Meter_Gas_Flow_Calculations_SI_Locked-120918 - Excel

File Home Insert Page Layout Formulas Data Review View Help Search

F39 =IF(G43="yes",G29,"ISO cond. not met")

Gas Flow/Venturi Meter Calculations - Flow Rate - S.I. Units

For Venturi Meters Meeting ISO 5167-4:2003 Requirements

User Inputs: Enter values in yellow cells only.

Pipe Diameter, D = 150.0 mm
 Measured Pressure Difference, P₁ - P₂ = 6.9 kPa
 Throat Diameter, d = 50.0 mm
 Elevation diff. between pipe centerline at press. taps, z₁ - z₂ = 0.0 mm
 (Note that z₁ - z₂ = 0 for a horizontal meter)

Click on the green cell below and then on the arrow to the right of it and use the drop down list to specify the type of **as cast** ISO 5167 standard converging Venturi section being used.

Calculations:

Pipe Diameter, D = 0.15000 m	Throat Diameter, d = 0.05000 m
Pipe Area, A ₁ = 0.017671 m ²	Throat Area, A ₂ = 0.0019635 m ²
Diameter Ratio, β = 0.3333	Measured Pressure Difference, P ₁ - P ₂ = 6900.0 Pa
Discharge Coeff., C = 0.9840	Pressure Ratio, P ₂ /P ₁ = 0.99
Fluid Density, ρ = 4.48267 kg/m ³	Pipe Flow Rate, Q = 0.1072 m ³ /s
Expansion Factor, Y = 0.9942	Pipe Velocity, V = 6.06 m/s
Ideal Gas Law Constant, R = 8.315 kN-m/kgmole-K	Reynolds No., Re = 3.623E+05 (in pipe)

Results:

Pipe Flow Rate, Q = 0.1072 m³/s

Uncertainty of Calculated Discharge Coefficient, C (±): 0.70%

References and Equations

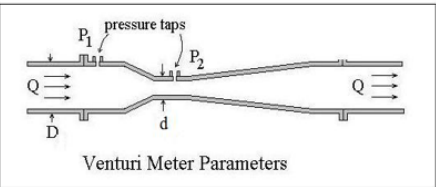
For background and descriptive information about Venturi flow meters see:

[Perry's Chemical Engineers' Handbook, 9th Ed. Sec. 8.8.4, Flow Measurements](#)

[Perry's Chemical Engineers' Handbook, 9th Ed. Sec. 10.1.12, Differential Pressure Flowmeters](#)

For a table with standard pipe size information, see:

[Piping Handbook, 7th Ed., Table E2.1M - S.I. units](#)



Venturi Meter Parameters

The equation for gas flow rate through a Venturi meter (horizontal, inclined or vertical) is:
 (Adapted from: [Perry's Chemical Engineers' Handbook, 9th Ed. Equation 10-25](#))

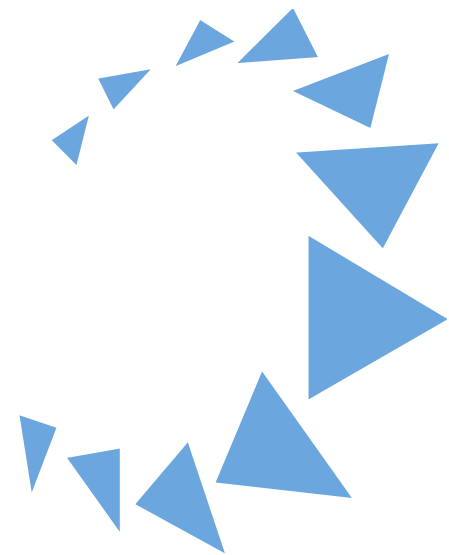
$$Q = C_o A_o Y \sqrt{\frac{2 Z R T_1 (P_1 - P_2)}{(M W) P_1 (1 - \beta^4)} + \frac{2 g (z_1 - z_2)}{(1 - \beta^4)}}$$

Where: Q = flow rate through the pipe and through the meter, m³/s
 C = discharge coefficient, dimensionless
 A₂ = Venturi throat area, m²
 P₁ = absolute pressure in the pipe at upstream pressure tap, Pa
 P₁ - P₂ = pressure difference between upstream and downstream pressure taps, Pa
 β = d/D = throat diam./pipe diam., dimensionless
 Z = compressibility factor of the gas at P₁, T₁
 R = Ideal Gas Law Constant = 8.3145 kN-m/kgmole-K
 MW = molecular weight of gas
 T₁ = upstream absolute temperature in the pipe, K
 Y = Expansion Factor - see equation for Y below

1. Intro - Start Here | 2. Gas Properties | 3. Flow Rate - ISO 5167 | 4. Throat Diam ...

Display Settings | 70%

Spreadsheet calculators streamline complex engineering calculations with full transparency of formulas and equations used



AccessEngineering has dynamic browsing options to easily find relevant content.

Browse by Course to map our content to syllabi for common engineering courses across all disciplines and grade levels.

Dynamic Browsing

Browse through available taxonomies to find content tagged to specific terms

The screenshot shows the top navigation bar with the McGraw-Hill logo and 'ACCESS Engineering' branding. Below the navigation is a search bar with the placeholder text 'Search AccessEngineering here...'. A red box highlights the 'Browse AccessEngineering content by...' section, which contains three buttons: 'Subject', 'Industry', and 'Course'. Below these buttons are several filter categories: 'Books', 'Videos', 'Spreadsheets', 'Case Studies', and 'Other'. A button labeled 'Explore material properties using DataVis' is also visible.

The 'Browse by Subject' dialog box features a search input field labeled 'Find items in this list'. Below the search field is a list of subject categories with expandable arrows and item counts:

- Energy engineering (65,423)
- Engineering management (24,749)
 - Engineering economics (5,207)
 - Engineering ethics (392)
 - Engineering problem solving (497)
 - Engineering research (9)
- Entrepreneurship (2,491)
 - Business plans (219)
 - Entrepreneurial financing (429)

At the bottom of the dialog are 'Cancel' and 'Browse Selected' buttons.

The 'Browse by Course' dialog box features a search input field labeled 'Find items in this list'. Below the search field is a list of course categories with expandable arrows, item counts, and checkboxes:

- Project management (5,544)
- Quality control (12,347)
- Reinforced concrete design (4,348)
- Separation processes (3,996)
- Signals and systems (4,317)
 - Defining a system (456)
 - Continuous-time signals (3,345)
 - Discrete-time signals (1,926)
- Six Sigma (12,189)
- Statics (4,167)

At the bottom of the dialog are 'Cancel' and 'Browse Selected' buttons.

Dynamic Browsing

Within your selection | Search AccessEngineering here... | Search

Browse AccessEngineering content by... | Show more

Results | Save search

1 active | Clear all | Show me... | 25 50 100 Items per page

Courses | **Everything** 2,791 | Books 2,756 | Videos 33 | Spreadsheets 2 | Case Studies 0 | Tutorials 0 | DataVis 0

Capacitors x | First order circuits x

Refine results by... | Subject | Industry | Book Type | Book Title | Book Component | Book Author | Equations | Codes & Standards

Chapter | 1. INTRODUCTION TO... | The Leyden jar (Fig. 1.1) was o... at the University of Leiden, the... of a glass jar with an outer and... | Source: Capacitor... | 16. Power Capacitor... | Current passing through a wire... and energy is related to the ma... etc. Reactive power energise th... | Source: Electric P...

Apply filters to narrow down results by content type, book type, or even specific equations

Filter by Equations

Include results for...

Find items in this list

Antoine equation (91)	<input type="checkbox"/>
Arrhenius equation (313)	<input type="checkbox"/>
Bell's equation (3)	<input type="checkbox"/>
Bernoulli's equation (590)	<input type="checkbox"/>
Bessel's function (494)	<input type="checkbox"/>
BET equation (15)	<input type="checkbox"/>
Bethe-Salpeter equation (4)	<input type="checkbox"/>
Bloch equations (132)	<input type="checkbox"/>
Boltzmann equation (576)	<input type="checkbox"/>
Boolean functions (123)	<input type="checkbox"/>

Cancel | Apply filter

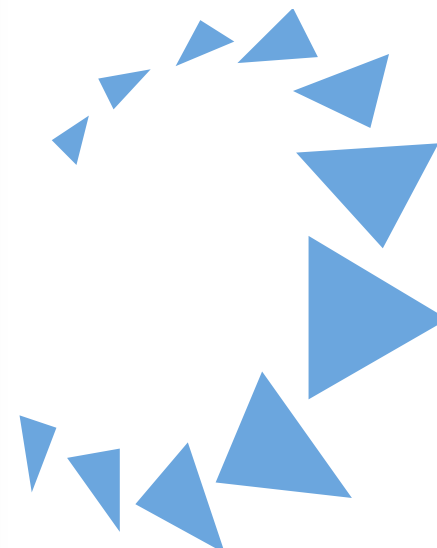
Filter by Codes & Standards

Include results for...

Find items in this list

2009 IBC (272)	<input type="checkbox"/>
2012 IBC (1,068)	<input type="checkbox"/>
2015 IBC (1,768)	<input type="checkbox"/>
2018 IBC (1,664)	<input type="checkbox"/>
2018 International Existing Building Code (224)	<input type="checkbox"/>
AASHTO LRFD (239)	<input type="checkbox"/>
ACI 318 (558)	<input type="checkbox"/>
ACI 530 (4)	<input type="checkbox"/>
AISC 341 (242)	<input type="checkbox"/>

Cancel | Apply filter



AccessEngineering further supports teaching with interactive instructional tools.

Use DataVis to visually explore material properties, or incorporate active learning with problem-based Case Studies.

Instructional Tools

DataVis helps students understand material properties with an interactive visual display comparing property values across material classes



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Citation | My Projects | Help | Home

Arc Welding of Metals | View/Edit Description | Save As | Share | Export Page | New

Electrode Material | Workpiece Material | Assembly Design

Workpiece Material | View Tabular Data

The parts being welded determine the required heat for welding. Since arc welding uses electricity for heat, the setting that is varied is the amperage. Metals with high melting points, that spread heat quickly, and that absorb heat well require higher amperage during welding. When welding steel, a rule of thumb is approximately one amp per thousandth of inch of thickness. So a 1/8 in (0.125 in) thick piece of material would require about 125 amps. If the parts spreads heat rapidly, a higher

Add Visualization

Select Materials: 221 selected

Expand All | Select All

- Metal (124)
- Polymer (32)
- Ceramic (28)
- Composite (35)
- Advanced (6)

Display Settings

- Show all included
- Show selected and in range only
- Show starred only

More Settings

Specific Heat Capacity (kJ/kg-K) vs Thermal Diffusivity (mm²/s)

Melting Temperature (°C)

Thermal Diffusivity (mm²/s) Edit | **Specific Heat Capacity (kJ/kg-K) Edit** | **Melting Temperature (°C) Edit**

Min: 0 | Max: 1100 | Min: 0.03 | Max: 5.6 | Min: 130 | Max: 4030

Related Content | Add/Edit

- 18.2 Metal Welding Processes
- 18.2.5 TIG Welding (GTAW)

DISCLAIMER - McGraw-Hill Education is not responsible for any links or content outside of AccessEngineering.

Tabular Data | Reorder Columns | **Export CSV**

Select	Range	Star	Material	Classification	Specific Heat Capacity (kJ/kg-K)	Thermal Diffusivity (mm²/s)	Melting Temperature (°C)
<input type="checkbox"/>	In	☆	Acetal Copolymer	Polymer	1.5	0.14	170
<input checked="" type="checkbox"/>	In	☆	Acrylonitrile Butadiene Styrene (ABS): Molded	Polymer	2.1	0.061	216
<input checked="" type="checkbox"/>	In	☆	Alloy Cast Iron Overview	Metal	0.51	7.3	1150
<input checked="" type="checkbox"/>	In	☆	Alumina (Al2O3): 96%	Ceramic	0.88	7.3	3750

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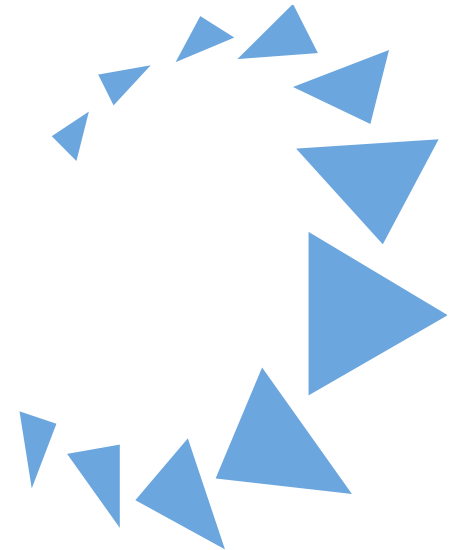
User Manuals and Tutorials

View available video tutorials and comprehensive user guides providing step-by-step instructions on how to use AccessEngineering's personalized research tools. LibGuide content is available for copy and reuse in your own research guides.

User Guides	File Format
AccessEngineering LibGuide	LibGuide
Quick Start Guide	Adobe Acrobat (.pdf)
AccessEngineering User Guide	Adobe Acrobat (.pdf)
DataVis User Guide	Adobe Acrobat (.pdf)

Video Tutorials	File Format
AccessEngineering Site Overview	YouTube
DataVis Tutorial	YouTube
Searching & Filtering	YouTube

Use promotional materials to create awareness of AccessEngineering and direct users to our guides and video tutorials for tips on using the site to its full potential



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See resources available on the AccessEngineering LibGuide and incorporate into your own guides



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AccessEngineering: Using AccessEngineering

Using AccessEngineering

Content by Discipline

DataVis Material Properties Tool

Promoting AccessEngineering

Copying our LibGuides

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Contact userservices@mheducation.com to request custom training, or view the additional options below.

General Overview Webinars: Sign up to attend an upcoming webinar providing an overview of site features and available content.

User Guides: Download a Quick Start Guide for performing basic functions on the site or the Platform User Guide for a detailed description of content types and site functionality.

Video Tutorials: View our brief videos showing how to perform basic functions on the site.

AccessEngineering Personal Account

To register for a free personal account:

- Click on the yellow **My Account** button in the site header
- Select **Log in via email/username**
- Click **Register**, then fill in the form with your name, email address, and a password
- (Optional) Select topics of interest to

Searching for Content in AccessEngineering

Searching:

- Typeahead suggests matching taxonomy terms as you type
- Results include matches on your exact search phrase, as well as matches on synonyms, sub-terms, and near-phrase matches
- Related search terms and a dictionary definition appear in the search results
- For more complex queries:
 - Boolean operators - power OR supply, power AND supply, power NOT supply
 - Grouping - (power AND supply) OR (power AND demand)
 - Wildcards - sup* will identify supply, support, superior

Browsing:

- Three browsing taxonomies were created with the help of subject matter experts
- Content is tagged to taxonomy terms using a semi-automated approach with context rules
- Select multiple terms in the browse window, or use the search bar in the window to search the taxonomy
- Browse options include:
 - Browse by Subject - drill down through 10 levels of terms, starting from the major engineering disciplines
 - Browse by Course - choose terms from course outlines 5 levels deep for 30 common engineering courses
 - Browse by Industry - see content tagged to 11 interdisciplinary industries

Result Filters:

- Additional terms from browse taxonomies
- Book Type (handbook, textbook, etc), Book Title and Book Author
- Book Component (chapters, figures, tables, example problems)
- Equations and Codes & Standards commentary

What is AccessEngineering?

AccessEngineering is an award-winning engineering references and teaching platform that delivers world-renowned, interdisciplinary engineering content integrated with analytical teaching and learning tools. **AccessEngineering** prepares students to solve real-world problems, makes curriculum planning and delivery easy for faculty, and helps professionals find relevant information faster, driving increased ROI.

AccessEngineering Searching & Filtering Tutorial



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MARC Records and Title List

MARC Records

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- Tutorials
- Videos

All dates
 Custom date range

From 06/16/2020 To 06/16/2020

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Search Sigma... Search

Reports for Institution

COUNTER report

Using this page, you may download COUNTER reports from publishers that are configured in SAMS Sigma.

COUNTER report type*
BR2 : Book Report 2 Clear

Include Zero Rows

Reporting start date*
Jan 2020

Reporting end date*
Apr 2020

Download report Clear



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of sales rep]

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Tips for Preparing for Your Presentation

Tips for Preparing for Your Presentation

Questions to Consider:

- What products are they using now?
- Are they currently using any digital resources?
- Why do they need this?
- Can our products help save them time, save them money, or make their lives easier?
- What problem are we solving?
- What problem do you think they have?
- How can McGraw Hill help?

Tips for Preparing for Your Presentation

Information to Gather:

- See what resources their library has now
- Review everything on the website about the program you're meeting and recent news related to the program
- See what their adopted textbooks are (by entering individual courses into the bookstore site)
- Review usage statistics and especially review access denied stats if they have a current subscription or prior trial
- Know your numbers – research enrollments, research exam scores/graduation rates, have a history of what they've been quoted, and know your own penetration numbers (i.e. 50% of programs in New York currently use XYZ)

Tips for Preparing for Your Presentation

Additional Tips:

- Familiarize yourself with the faculty and their background. This could come in handy. For example, if you know the Chair of a program graduated from NYU. Then you can sprinkle in the fact that NYU is currently using this to help establish credibility and buy-in.
- Rehearse your presentation at least five times out loud and standing. This will help you not only identify potential places you'll get hung-up, but it'll reinforce the phrasing you'd like to use.