

Prefix, Number and Name of Course:

ACM 613: Topics in Spreadsheets and Databases for Math and Science Professionals

Credit Hours: 1

In Class Instructional Hours: 1

Labs: 0

Field Work: 0

Catalog Description:

Prerequisite: Instructor Permission

Applications of spreadsheet and database software programming to solve real life problems in computational mathematics. Analysis of data to produce reports and presentations for diverse audiences.

Reasons for Addition:

The reason for addition of this course is to create a one-semester-hour core module in problem solving in professional, applied and computational mathematics using spreadsheet and database software. This course is in response to the fact that spreadsheets and databases are used extensively in business and industry.

<p>Student Learning Outcomes: Students will:</p> <ol style="list-style-type: none"> 1. program and analyze data using different spreadsheet and database computing languages. 2. design and implement algorithms to analyze data using spreadsheet and database computing languages. 3. analyze, compare and contrast the advantages of disadvantages of different spreadsheet and database computing languages. 4. create reports and presentations using typesetting software. 	<p>Course Content References:</p> <p>II, III, IV</p> <p>I,II,III,IV</p> <p>II,III,IV,V</p> <p>III</p>	<p>Assessment:</p> <ol style="list-style-type: none"> 1. Individual homework, assignments, examinations and/or computer projects. 2. Individual homework assignments, group work. 3. Individual homework assignments, group work, examinations and computer projects. 4. Individual homework assignments, group work, examinations, portfolios and computer projects.
<p>Course Content:</p> <p>I. Storing data with spreadsheets and databases</p> <ol style="list-style-type: none"> A. Capabilities and limits of spreadsheets and databases B. Structure of data in spreadsheets and databases C. Case studies in big data 		

II. Performing calculation with spreadsheet and database software

- A. Formulas and visual basic (VBA) to create advanced spreadsheets
- B. Creating databases and using queries in databases
- C. Case studies and problem solving using databases and spreadsheets

III. Presenting data with spreadsheet software

- A. Creating forms and presenting results with spreadsheet
- B. Creating reports from databases
- C. Case studies and example from business, industry, science and mathematics

IV. Applications

- A. Applications of spreadsheets and databases to business, industry, science and mathematics.
- B. Analysis of benefits to business and industry from using spreadsheets and database software.

V. Software for spreadsheets and databases

- A. Overview of commercial and open source software to create and program spreadsheets and relational databases.
- B. Cost-benefit analysis of software currently available.

Resources:

Scholarships in the Field:

Atkinson, P., Vieira, R., & Ebook Library. (2012). *Beginning microsoft SQL server 2012 programming: Electronic resource*. Hoboken: Hoboken : John Wiley & Sons, 2012.

Boicea, A., Serban, A., Nicula, A., & Radulescu, F. Distributed databases replication methods for MySQL. *Annals of DAAAM & Proceedings*, 167, 2012.

Keller, C. M., & Kros, J. F. (2011). An innovative excel application to improve exam reliability in marketing courses. *Marketing Education Review*, 21(1), 21-27. doi: 10.2753/MER1052-8008210103

Walkenbach, J. (2011). *Excel 2007 formulas: Electronic resource*. Hoboken: Hoboken : John Wiley & Sons, 2011.

Walkenbach, J. (2010). *Excel 2010 power programming with VBA: By john walkenbach. [electronic resource]*. Hoboken, N.J: Hoboken, N.J. : Wiley Pub., Inc., 2010.

Churcher, C., & SpringerLink (Online service). (2008). *Beginning SQL queries: From novice to professional / clare churcher. [electronic resource]*. Berkeley, CA: Berkeley, CA :New York, NY : Apress ;Distributed to the Book trade worldwide by Springer-Verlag New York, c2008.

Birnbaum, D. (2005). *Microsoft excel vba programming for the absolute beginner: Duane birnbaum. [electronic resource]*. Boston, MA: Boston, MA : Course Technology, 2005.

DeCoursey, W. J. (2003). *Statistics and probability for engineering applications with microsoft excel: By W. J. DeCoursey. [electronic resource]*. Boston: Amsterdam ;Boston : Newnes, c2003.

Walkenbach, J. (2010). *Excel VBA programming for dummies: By john walkenbach. [electronic resource]*. Indianapolis, Ind: Indianapolis, Ind. : Wiley Pub., Inc., 2010.

DuBois, P., 1956. (2003). *MySQL cookbook: Paul DuBois*. Sebastopol, CA: Sebastopol, CA : O'Reilly, c2003.

Jorgensen, A., Segarra, J., LeBlanc, P., Cherry, D., Nelson, A., & Ebook Library. (2012). *Microsoft SQL server 2012 bible: Electronic resource*. Hoboken: Hoboken : John Wiley & Sons, 2012.

Marasinghe, M. G., & Kennedy, W. J. (2008). Introduction to the SAS language. (pp. 1-54). New York, NY: Springer New York. doi: 10.1007/978-0-387-77372-8_1

Marasinghe, M. G., Kennedy, W. J. 1., & SpringerLink (Online service). (2008). *SAS for data analysis: Intermediate statistical methods / by mervyn G. marasinghe, william J. kennedy. [electronic resource]*. New York: New York : Springer, c2008.

Oppel, A. J. (2009). *Databases: A beginner's guide / andrew J. oppel*. New York: New York : McGraw-Hill, c2009.

Vaswani, V. (2004). *MySQL: The complete reference / vikram vaswani*. New York: New York : McGraw-Hill/Osborne, c2004.

Periodicals:

SIAM Journal on Computing
Spreadsheets in Education Journal

Electronic and/or Audiovisual Resources:

Open source spreadsheet software: <http://www.libreoffice.org/>

Excel templates: <http://office.microsoft.com/en-us/templates/excel-templates-FX102828204.aspx>