

## AMSER Spotlight: Math Forum

AMSER frequently teams up with other digital collections so we can bring the excellent materials from these collections to AMSER users. In each issue of our quarterly, we highlight a collection we have integrated into AMSER. One of these AMSER partners is Math Forum, a leading center for mathematics and mathematics education on the Internet. Math Forum operates under Drexel University's School of Education and the National Science Foundation (NSF) funded its initial development. Their mission is to "provide resources, materials, activities, person-to-person interactions, and educational products and services that enrich and support teaching and learning in an increasingly technological world." The community of users and contributors includes teachers, students, researchers, parents, educators, and citizens at "all levels who have an interest in math and math education." They accomplish their mission in a variety of ways including encouraging communication in the mathematical community, providing model interactive projects on their site, working to make online math resources more accessible, and providing high-quality math content on the web.



The amount of fine resources offered by Math Forum is extensive and AMSER has worked to integrate the best of Math Forum's applicable resources into our own portal. Some examples from the collection include:

<http://amser.org>



### Math 30: Introduction to Linear Models

<http://www.dartmouth.edu/~matc/math30/CourseTopics.html>

This introductory course covers simple linear regression, multiple regression, and analysis of variance, as well as statistical model-building strategies. Regression diagnostics, analysis of complex data sets and scientific writing skills are emphasized. Methods are illustrated with data sets drawn from the health, biological, and social sciences. The site includes a syllabus and data sources, as well as a list of course topics linked to relevant individual data sources, and class examples.

### University of British Columbia Calculus Online Homepage

<http://www.ugrad.math.ubc.ca/coursedoc/math101/>

This site is an online supplement to a mathematics course being taught within the University of British Columbia Department of Mathematics. The content includes course notes (Definite Integrals and the Fundamental Theorem of Calculus, Applications of the Definite Integral, Techniques for Antidifferentiation,

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Differential Equations, Weighted Averages, More Techniques for Integration, Taylor Polynomials and Series), labs, in-class demonstrations (Introduction to Integration, Differential Equations, Probability, Series), and links to other interesting sites.

### Exploring Data

<http://exploringdata.net/>

For many students who wish to embark into the world of statistics, the whole process can be a bit daunting. Fortunately, the Exploring Data website makes such a proposition a bit easier for both students and teachers. The site is easy to navigate, and the homepage contains an index of topics and materials ranging from linear regression to sampling. Each of these sections includes activities, worksheets,

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and datasets that can be used in a variety of ways. More advanced students will appreciate the fact that the site also contains material that goes beyond some of the basic concepts within the field, and educators will also want to recommend this site to students who might need a bit of a refresher on certain key areas.

**Exploring Data: Datasets**

<http://exploringdata.net/datasets.htm>

The datasets available here were designed to support the activities, worksheets, assessment, and articles in the Exploring Data website (above). Each data set is identified by topic and available in three formats: Excel 4.0, NCSS Jr. 6.0, and Tab Delimited. Some examples of datasets include: US Draft Lotteries, AIDS/HIV, Air Pollution, Anscombe’s Dataset, Bradmanesque, Carbon Dioxide, Carbon Emissions, Challenger, Cloud Seeding, Codeine Concentration, Density of the Earth, Density of Nitrogen, Diamond Rings, Galileo’s Experiments, Global Temperature, Metric Estimates, Oil Production, Old Faithful, Olympic Gold, Oscar Winners, Pottery, Smoking and Cancer, Speed of Light, and World Population.

You can find Math Forum at:  
<http://mathforum.org/>

**AMSER Features: Bird Migration Featured Folder**

Within the AMSER Collection, AMSER staff has created series of Featured Folders, which are sets of resources aimed at illustrating a given topic by combining six to eight resources in a single shared folder. The individual resources in each folder were selected from AMSER’s extensive collection and were chosen because each resource helps to demonstrate various aspects of the specific folder’s topic. For more details on how to use and find AMSER’s Featured Folders, see the Summer 2008 issue of the AMSER Quarterly, which can be found in the About section of AMSER in the “AMSER Quarterly” tab.



With spring just around the corner, we have highlighted Bird Migration, one of the over 50 Featured Folders within the AMSER collection. This Featured Folder provides links to resources that cover the seasonal journeys birds make in response to alterations in weather, habitat, and food availability. Resources within this folder include:

**Migration Ecology**

<http://orn-lab.ekol.lu.se/birdmigration/>

This site from the University of Lund, Sweden, introduces various research studies in the field of Migration Ecology including research information on “Orientation and navigation,”

“Flight,” “Migration patterns,” and “Energetics.” The mission of the group is “to forward, by research and teaching, the understanding of adaptive values and evolutionary possibilities and limitations in animal migration, -flight, -orientation and energetics.” Many of the group’s publications are available for free as PDFs, and the site offers a simple search mechanism to help visitors find the publications they are seeking.

**Spring Migration**

[http://www.enature.com/birding/migration\\_home.asp](http://www.enature.com/birding/migration_home.asp)

The Spring Migration site from eNature.com and the National Wildlife Federation provides an online reference for bird enthusiasts that shows the dates that each species can be expected to return to its summer habitat. Site visitors can choose from a large number of species found in their range. Maps show summer and winter habitat ranges and migration patterns. The site also provides photos, field guide information, and bird call audio for each species.

Visit <http://amser.org/amser/topicindepthbirdmigration> to see all the resources from the Bird Migration Featured Folder, or visit <http://amser.org/ff> to see all the AMSER Featured Folders.

*Do you know of a great collection of resources that you’d like to see integrated into AMSER? Do you have a learning object that helps students truly understand a specific concept? If so, e-mail us at [resources@amser.org](mailto:resources@amser.org), or follow the link at the bottom of the AMSER home page to submit a resource suggestion.*

*Don’t forget to become a fan of AMSER on Facebook - we can be found by searching for The Applied Math and Science Education Repository - or check out our tweets on Twitter at [AmserDotOrg](http://AmserDotOrg). We’ll keep you connected with updates on AMSER resources, AMSER events, and all things new in AMSER.*

## AMSER User's Corner

In previous issues of our quarterly, we have had individual contributors from Biology, Chemistry, and Mathematics share some of their favorite resources from AMSER. In this issue, we highlight some of the resources that our users have rated highly using the AMSER rating system.



Upon creating a login for AMSER, users gain many additional privileges in the portal. One of these privileges is the ability to rate a resource that was (or was not) particularly useful so other users can benefit from previous experience with a resource. There are two ways to rate a resource in AMSER: they may be rated directly from the AMSER front page, or by searching or browsing for the resource record. After locating the record, display the full version by clicking "More Info" and you will find the ratings section at the bottom of the screen. After rating the resource, you must click the "Rate" button in order to save your rating. The more users provide ratings, the more valuable the AMSER portal becomes for the user community as a whole. If you would like to see all of the resources rated highly in AMSER, just go to the "Advanced Search" (found at the top right of any page) and click on "Show Limits." From here, find the drop down

menu labeled "Minimum Rating" and click on how many stars you prefer. You can further limit this search by entering a specific keyword. If you find resources that you particularly enjoy or find exceptionally useful, we encourage you to rate the resource yourself so other AMSER users can benefit from your feedback.

Here you will find a small sample of some of the resources that AMSER users have given a five-star rating.

### Tropical Disease Research Programme

<http://www.who.int/tdr/>



Tropical diseases are a serious business, particularly in the developing world, so it's good to know that the World Health Organization has had an independent scientific research group working in this area since 1975. From their homepage, visitors will find sections titled "Research Results," "Grants," and "Publications." Visitors who may not be familiar with their work will want to look over the "Headline News" area, as it brings together news features on river blindness, malaria eradication, and community-led public health initiatives. The "Research Results" area is a fine way to learn more about the organization's work over the past decade, and the "Publications" area

contains working papers organized by year and over two dozen valuable training aids. Additionally, visitors looking for material related to a specific tropical disease can click directly on visual icons representing malaria, leprosy, dengue, and chagas disease.

### Single-Celled Organisms [pdf]

<http://www.marine.usf.edu/pjoccean/packets/sp02/sp02u3p2.pdf>

This Project Oceanography lesson plan (PDF) explores the symbiotic relationships of single-celled organisms. In this activity, students will compare and contrast three types of symbiotic relationships, describe the relationship between zooxanthellae (a dinoflagellate) and coral, and explain the effects of nitrogen-fixing bacteria on their symbiotic partners. It begins with an introduction to symbiotic relationships, the dinoflagellate/coral system, and cyanobacteria, and then features an interactive activity called "Feeding Friends," in which students work in partners to act out symbiotic relationships.

### Ecology and Society

<http://www.ecologyandsociety.org/Journal/>



Formerly Conservation Ecology, this electronic, open access, peer-reviewed,

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multi-disciplinary journal provides research findings on the management, stewardship and sustainable use of ecological systems, resources and biological diversity at all levels, the role natural systems play in social and political systems, and the effect of social, economic and political institutions on ecological systems. All articles from all back issues are available in the archives from the first issue published in 1994 to the most current issue in progress; visitors can find these by clicking on the "Find back issues" link to the right. As always, submission guidelines and journal policies are also available for those looking to publish in the journal.

### Football Physics

<http://physics.unl.edu/outreach/football.html>

Dr. Tim Gay at the University of Nebraska - Lincoln discusses the physical concepts related to football such as vectors, impulse, and atoms. The website provides seven current as well as archived QuickTime videos of entertaining lectures to help students understand physical concepts. The lessons covered are: Inertia; Vectors; Newton's Third Law; Impulse; Quickness, Speed, Power and Strength; and Quickness and Ankle Injuries. This resource is an excellent tool for any physics classroom educator looking to relate physics concepts in a real-world manner to high school or undergraduate students.

*Would you like to be featured in a future AMSER Quarterly? We'd love to hear from you and learn about your favorite AMSER resources and how you've been using them in an educational setting. Please e-mail us at [amser@amser.org](mailto:amser@amser.org) for details.*

## Calendar of AMSER Events

### Where in the world is AMSER?

We'll be at various conferences and meetings this year and we'd love to talk to you about what you're doing with digital resources and how we can make AMSER more useful to you and your students. Here's where we'll be and when:

| March   | April   | May  |
|---|---|--|
| <b>League for Innovations</b><br>March 28-31, 2010<br>Baltimore, Maryland | <b>American Association of Community Colleges (AACC) Annual Conference</b><br>April 17-20, 2010<br>Seattle, Washington<br><br><b>Wisconsin Association of Academic Librarians (WAAL)</b><br>April 20-23, 2010<br>Milwaukee, Wisconsin | <b>National Institute for Staff &amp; Organizational Development (NISOD) Annual Conference</b><br>May 30 - June 2, 2010<br>Austin, Texas |

For more AMSER events and links go to <http://www.amser.org/events>

## Contact Information

Have a question? Want to share information about how you're using AMSER or other digital materials in your classroom? Please contact us!

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