



## Introductory Statistical Concepts: Ohio State University

(For a list of topics covered in the course, please see [http://www.theNCAT.org/R2R/AcadPrac/Topics/OSU\\_IntroStatCon\\_Top.pdf](http://www.theNCAT.org/R2R/AcadPrac/Topics/OSU_IntroStatCon_Top.pdf).)

Introductory Statistical Concepts is a one-quarter, five-credit course that uses the following materials:

### Commercial Materials

- Textbook: *Statistics: Concepts and Controversies*

Author: David Moore  
Publisher: FH Freeman  
Edition: 5th edition

- Workbook: *Lab and Activities Supplement for Statistics: Concepts and Controversies*

Author: Dennis Pearl  
Publisher: WH Freeman  
Edition: 5th edition

- Videos: *Against All Odds*

Source: Public Broadcasting Service (PBS)  
[http://www.pbs.org/als/against\\_odds/index.html](http://www.pbs.org/als/against_odds/index.html)  
To view online: <http://www.learner.org/resources/series65.html>

**Description:** The videos (26 half-hour programs) provide an exploration of statistical processes, stressing data-centered topics rather than the more traditional path from probability to formal inference. Videos can be used to illustrate particular statistical concepts.

**How to obtain:** A variety of licensing and purchasing options are available. See the PBS web site for more details.

- Software: *DataDesk*

Publisher: Data Description, Inc.  
<http://www.datadesk.com/>

**Description:** *DataDesk* is a professional data analysis and data mining software package that provides interactive graphical tools for exploring and understanding data and for finding patterns, relationships and exceptions.

**How to obtain:** See the *DataDesk* web site for details.

- Concept Applets

Publisher: WH Freeman  
<http://www.whfreeman.com/scc/>

**Description:** Twelve interactive applets provide students with the opportunity to see how the statistic changes as different values are selected. Each applet addresses a different concept in statistics.

**How to obtain:** Although the applets are linked to the textbook, they are available at no charge on the WH Freeman web site.

- The Electronic Encyclopedia of Statistical Examples and Exercises (EESSEE)

Publisher: WH Freeman  
<http://www.whfreeman.com/eesee/eesee.html>

**Description:** Available for all WH Freeman textbooks, this series of cases and short stories provides a variety of examples from the popular press and scientific literature. The series was developed by members of OSU's statistics department. Each case is accompanied by problems, graphics, and data sets portable to various statistical formats. Some cases are accompanied by video clips.

**How to obtain:** The student version of these cases and stories are available on the WH Freeman web site at no charge. The instructor version is available to statistics instructors using WH Freeman textbooks or using the CD version of EESSEE in their courses.

- Cartoon of the Day

Publishers: Cartoon Stock and Cartoon Bank  
<http://www.Cartoonstock.com/>  
<http://www.Cartoonbank.com>

**Description:** A strong selection of cartoons from a range of sources and artists (primarily from the *New Yorker*) are available on these two web sites. These drawings illustrate various humorous applications of statistical information. These are sorted by subject matter and can be selected to relate to topics in the course. OSU displays a different cartoon every day of the quarter on the front page of the course web site. Each cartoon can be licensed for a three-year period with costs ranging from \$10 to \$20 per cartoon.

**How to obtain:** See the web sites listed above for more details.

### **Materials in widely available formats developed by Ohio State University**

- Course Web Site

**Description:** The course web site serves as the student gateway to the course. It is the basic way to see lecture notes, syllabus materials: readings, study guides, assignments, links to *Against All Odds* videos, homework assignments (with solutions posted on certain dates), cartoons and grades. Some sections are available to all students and guests; other components are password protected.

**Technical Requirements:** Ability to run a web browser.

**How to preview:** <http://www.stat.ohio-state.edu/~stat135/> with password to view portions with individualized content.

**How to obtain:** Contact [Dennis Pearl](#) at Ohio State University.

- Glossary

**Description:** OSU has defined every term in the textbook's index and placed the definitions online linked to a search engine. The glossary can be accessed from the front page of the course web site.

**Technical Requirements:** Web Browser and internet access.

**How to preview:** <http://www.stat.ohio-state.edu/~stat135/glossary>

**How to obtain:** For an implementation of the applet free of charge, visit <http://java.sun.com/openstudio/>. To obtain the completed glossary for this textbook, contact [Dennis Pearl](#) at Ohio State University.

- Web Links

**Description:** The OSU course web site provides links to the course syllabus, data sets, applets, and the Electronic Encyclopedia of Statistical Examples and Exercises. There is also a page of web links that guide students to sites for news sources such as CNN, journals in science and medicine, and polling organizations such as Gallup. These sites offer articles and examples that provide opportunities for studies using real life examples. Most sites are free, although some required payment.

**Technical Requirements:** Web browser and internet access; ability to run a web server.

**How to preview:** <http://www.stat.ohio-state.edu/~stat135/links>

**How to obtain:** <http://www.stat.ohio-state.edu/~stat135/links>

- FAQ System

**Description:** OSU has developed an extensive list of Frequently Asked Questions (FAQs). The system allows students to browse, search the list using keywords, or send email if their specific questions are not included. Developed by the Office of Technology Enhanced Learning and Research in ColdFusion, the FAQs are accessed through the front page of the course website.

**Technical Requirements:** Web browser and internet access; server for Cold Fusion 4.5 or higher.

**How to preview:** <http://www.stat.ohio-state.edu/~stat135> with password

**How to obtain:** Contact [Dennis Pearl](#) at Ohio State University.

- Data Sets

**Description:** These data sets provide the raw data students need to complete the problems in the workbook/lab manual by Pearl in concert with *DataDesk*. The data can also be provided for use with *MiniTab*.

**Technical Requirements:** Web browser and internet access; *DataDesk* or *MiniTab*.

**How to preview:** <http://www.stat.ohio-state.edu/~stat135/datasets>

**How to obtain:** These data sets can be downloaded from the course web site or provided by OSU on a CD.

- Additional Lab Resources

**Description:** The OSU course special materials or supplies needed to run particular labs in concert with the lab manual listed above. For example, one lab requires M&Ms to study probability and another lab includes a blood pressure machine for data collection. Additional information is available

so that instructors are ready for hands-on student experiences. Instructor materials also provide real solutions to lab problems and pedagogical guides for conducting the labs. These materials are available as Word files. Online instructor resources include rosters, student progress reports, editors for FAQs and mastery quizzing facilities, web usage reports, interface for posting notes and full access to MySQL databases.

**Technical Requirements:** Web browser and internet access; ability to run my MySQL on a server.

**How to preview:** <http://www.stat.ohio-state.edu/~stat135/> with password

**How to obtain:** Contact [Dennis Pearl](#) at Ohio State University.

### **Materials in specialized formats developed by Ohio State University**

- Customized MySQL Data Base

**Description:** All OSU transaction materials are written in PHP with a mySQL database that links all course components to 90 course-learning objectives. The learning objectives provide linkages among all aspects of the course. Every problem in the text, every quiz and exam question, every lab in the manual, every problem in the lab manual, and so on, is linked to a learning objective. The system can display the right course components depending on the learning preferences and the choices students make. OSU's buffet redesign model requires flexible tracking of the multiple approaches available to students to be sure that all students are meeting all learning outcomes, and the database enables this tracking. To use the database, knowledge of PHP programming is needed.

**Technical Requirements:** MySQL database, PHP coding capability and PHP server.

**How to preview:** <http://www.stat.ohio-state.edu/~stat135/> with password

**How to obtain:** Contact [Dennis Pearl](#) at Ohio State University.

- Learning Preferences Assessment

**Description:** Key to providing greater individualized instruction is obtaining an understanding of students' learning preferences. Ohio State uses the online Index of Learning Styles Questionnaire by Solomon and Felder at North Carolina State University (NCSU.) This instrument is available at no charge. OSU has converted NCSU's PERL script to PHP so that it will interact with OSU's MySQL database and link the output (scores) with the other components of the course. Once the data are available, OSU course staff work with students to determine which course activities match well with their learning preferences.

**Technical Requirements:** Three versions of the assessment are available. 1) Web browser and internet access to use NCSU web site; 2) Server with CGI component to use NCSU PERL script; 3) Ability to run PHP server to use OSU's PHP version.

**How to preview:** <http://www.engr.ncsu.edu/learningstyles/ilsweb.html>

**How to obtain:** 1) Students may take the assessment directly on the NCSU web site. 2) Contact [Yatin Karpe](#) for further information about obtaining NCSU's PERL script. 3) Contact [Dennis Pearl](#) to obtain OSU's PHP version.

- Study Strategies Inventory

**Description:** The Academic Learning Lab at OSU has developed a web-based study skills assessment for students. The goal was to help students understand their strengths and weaknesses so that they would be more prepared to select choices in the buffet model. Course staff also use the study skills assessment as they help students make choices in how to study statistics. Students rate themselves on basic study skills, time management, procrastination, and taking responsibility for learning. Written in PHP, the questionnaire uses a Likert scale of 66 items.

**Technical Requirements:** Web browser and internet access; PHP coding capability and PHP server.

**How to preview:** <http://www.stat.ohio-state.edu/~stat135/> with password

**How to obtain:** Contact [Dennis Pearl](#) or [Bruce Tuckman](#) at Ohio State University.

- Student Learning Contracts

**Description:** Students complete a learning contract for each component of the course. The contract includes several choices such as whether students will take part in an active or reflective large group, a hands-on or discovery-based lab, or in class or out-of-class problem solving. Written in PHP, this program first allows students to choose their study preferences and then it assigns meeting rooms to ensure that students making similar choices will work together.

**Technical Requirements:** Web browser and internet access; PHP coding capability and PHP server.

**How to preview:** <http://www.stat.ohio-state.edu/~stat135/> with password

**How to obtain:** Contact [Dennis Pearl](#) at Ohio State University.

- Test Questions

**Description:** All test questions for mastery quizzes were written at OSU in PHP, and each question or item is linked to a learning objective. For a specific mastery quiz, the instructor enters the learning objective numbers, and a random quiz is generated. Quiz results are recorded in the database.

**Technical Requirements:** Web browser and internet access; MySQL database, PHP coding capability and PHP server.

**How to preview:** <http://www.stat.ohio-state.edu/~stat135/> with password

**How to obtain:** Contact [Dennis Pearl](#) at Ohio State University.

- MyCheckList

**Description:** Because the buffet redesign model allows students to follow a path that is designed to build on their learning strengths and preferences and because students may try different paths in different modules, it is very important for them to be clear about what tasks they must do and when these need to be accomplished. Thus, each student has an individualized checklist based on the choices they make to complete a particular module. The checklist includes individualized assignments; class meeting schedules depending on their learning preferences; and out-of-class activities such as study guides for increased reading comprehension and mastery quizzes. Without these individualized checklists, it would be easy for students to become confused and unsuccessful.

**Technical Requirements:** Web browser and internet access; PHP coding capability and PHP server.

**How to preview:** <http://www.stat.ohio-state.edu/~stat135/> with password

**How to obtain:** Contact [Dennis Pearl](#) at Ohio State University.

- Student Testimonials

**Description:** A special feedback mechanism designed by OSU creates student testimonials to provide new students with a greater understanding of the course activities from the student's point of view. Students provide feedback in one term, which is then available during the next term for other students as "Testimonies of Students Like Me." These testimonials provide relevant information about the student who provided testimony. They can be searched according to learning styles. The testimonials include questions about small groups and project-based learning.

**Technical Requirements:** Web browser and internet access; PHP coding capability and PHP server.

**How to preview:** <http://www.stat.ohio-state.edu/~stat135/> with password

**How to obtain:** Contact [Dennis Pearl](#) at Ohio State University.

- Institutional Review Board (IRB) Disclosure

**Description:** In order to be sure that all parts of the redesign are working well, OSU continually collects data about student success, student difficulties and student attitudes. The IRB at OSU requires that all students understand the role of research in the course. Thus, each student receives an IRB information disclosure statement and must agree to participate in the research. Students have the option to refuse in which case their data are not included in any public reports. Very few select this option.

**Technical Requirements:** Web browser and internet access.

**How to preview:** <http://www.stat.ohio-state.edu/~stat135/> with password

**How to obtain:** Contact [Dennis Pearl](#) at Ohio State University or copy from the web site.