# Intermediate PHP & MySQL

## Course Summary

**Description**
In this PHP training course, students will learn to create database-driven websites using PHP and MySQL or the database of their choice. The class also covers SQL basics.

**Objectives**
At the end of this course, students will be able to:

- Understand how PHP works
- Learn the basic syntax of PHP
- Create dynamic interactive pages with PHP
- Manipulate files with PHP
- Work with arrays in PHP
- Validate forms with PHP
- Write functions in PHP
- Manipulate and manage database data with PHP
- Authenticate users with PHP
- Manage sessions with PHP
- Work with the PEAR:DB module
- Use advanced form validation with regular expressions
- Send email with PHP
- Understand how MySQL works
- Use SQL to output reports with MySQL
- Modify MySQL data with SQL

**Topics**

- PHP Basics
- Flow Control
- PHP and HTML Forms
- String Manipulation
- Reusing Code and Writing Functions
- Simple SELECTs
- Subqueries, Joins and Unions
- Inserting, Updating and Deleting Records
- Managing Data
- PEAR:DB
- Authentication with PHP and SQL
- Regular Expressions
- Session Control and Cookies
- Sending Email with PHP
- File System Management

Optional Topics (Covered with students if time)

- Use Smarty templates for generating multi-page applications with a consistent look-and-feel
- Enforce access and data security for web applications.
- Use object-oriented techniques to create reusable objects.
- Perform sophisticated SQL queries
- Create stored procedures and functions
- Use triggers for data

**Audience**
This course is designed for programmers responsible for developing and/or maintaining PHP web based applications that access a MySQL database. This course is designed as a second level course for students in the PHP programming language.

**Prerequisites**
Students should have basic MS-Windows knowledge, including file creation, text editing, FTP client, and Web browser usage. The student should also have basic knowledge HTML, web concepts, and basic PHP programming concepts.

**Duration**
Four days

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## Course Outline

**I. PHP Basics**
- A. How PHP Works
- B. The php.ini File
- C. Basic PHP Syntax
  1. PHP Tags
  2. PHP Statements and Whitespace
  3. Comments
  4. PHP Functions
  5. Hello World!
- D. PHP Tags
- E. PHP Statements and Whitespace
- F. Comments
- G. PHP Functions
- H. Hello World!
- I. Variables
  1. Variable Types
  2. Variable Names (Identifiers
  3. Type Strength
  4. Hello Variables!
  5. Variable Scope
  6. Superglobals
  7. Constants
  8. Variable-Testing and Manipulation Functions
- J. Variable Types
- K. Variable Names (Identifiers
- L. Type Strength
- M. Hello Variables!
- N. Variable Scope
- O. Superglobals
- P. Constants
- Q. Variable-Testing and Manipulation Functions
- R. PHP Operators
- S. Creating Dynamic Pages
  1. Single Quotes vs. Double Quotes
  2. Howdy World!
- T. Single Quotes vs. Double Quotes
- U. Howdy World!
- V. Conclusion

**II. Flow Control**
- A. Conditional Processing
  1. If Conditions
- B. If Conditions
- C. Loops
  1. while
  2. do...while
  3. for
  4. break and continue
- D. while
- E. do...while
- F. for
- G. break and continue
- H. Conclusion

**III. Arrays**
- A. Enumerated Arrays
  1. Initializing Arrays
  2. Appending to an Array
  3. Reading from Arrays
  4. Looping through Arrays
- B. Initializing Arrays
- C. Appending to an Array
- D. Reading from Arrays
- E. Looping through Arrays
- F. Associative Arrays
  1. Initializing Associative Arrays
  2. Reading from Associative Arrays
  3. Looping through Associative Arrays
  4. Superglobal Arrays
- G. Initializing Associative Arrays
- H. Reading from Associative Arrays
- I. Looping through Associative Arrays
- J. Superglobal Arrays
- K. Two-dimensional Arrays
  1. Reading from Two-dimensional Arrays
  2. Looping through Two-dimensional Arrays
- L. Reading from Two-dimensional Arrays
- M. Looping through Two-dimensional Arrays
- N. Array Manipulation Functions
- O. Conclusion

**IV. PHP and HTML Forms**
- A. HTML Forms
  1. How HTML Forms Work
  2. A Sample HTML Form

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3. Form Variables

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## Course Outline (cont'd)

A. How HTML Forms Work
B. Conclusion
C. A Sample HTML Form
D. Form Variables

**V. String Manipulation**
A. Formatting Strings
1. Concatenation
2. String Manipulation Functions
3. Examples of String Functions
B. Concatenation
C. String Manipulation Functions
D. Examples of String Functions
E. Magic Quotes
1. magic_quotes_gpc
2. magic_quotes_runtime
3. Recommendation on Magic Quotes
4. Conclusion
F. magic_quotes_gpc
G. magic_quotes_runtime
H. Recommendation on Magic Quotes
I. Conclusion

**VI. Reusing Code and Writing Functions**
A. Including Files
1. require
2. require_once
3. auto_prepend_file and auto_append_file
B. require
C. require_once
D. auto_prepend_file and auto_append_file
E. User Functions
1. Defining and Calling Functions
2. Default Values
3. Variable Scope
4. By Reference vs. By Value
F. Defining and Calling Functions
G. Default Values
H. Variable Scope
I. By Reference vs. By Value
J. Form Processing
1. Code Organization
K. Code Organization
L. Conclusion

**VII. Simple SELECTs**
A. Introduction to the Northwind Database
B. Some Basics
1. Comments
2. Whitespace and Semi-colons
3. Case Sensitivity
C. Comments
D. Whitespace and Semi-colons
E. Case Sensitivity
F. SELECTing All Columns in All Rows
G. SELECTing Specific Columns
H. Sorting Records
1. Sorting By a Single Column
2. Sorting By Multiple Columns
3. Sorting By Column Position
4. Ascending and Descending Sorts
I. Sorting By a Single Column
J. Sorting By Multiple Columns
K. Sorting By Column Position
L. Ascending and Descending Sorts
M. The WHERE Clause and Operator Symbols
1. Checking for Equality
2. Checking for Inequality
3. Checking for Greater or Less Than
4. Checking for NULL
5. WHERE and ORDER BY
N. Checking for Equality
O. Checking for Inequality
P. Checking for Greater or Less Than
Q. Checking for NULL
R. WHERE and ORDER BY
S. The WHERE Clause and Operator Words
1. The BETWEEN Operator
2. The IN Operator
3. The LIKE Operator
4. The NOT Operator
T. The BETWEEN Operator
U. The IN Operator
V. The LIKE Operator
W. The NOT Operator

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X. Checking Multiple Conditions
   1. AND
   2. OR
   3. Order of Evaluation

# Intermediate PHP & MySQL

## Course Outline (cont'd)

Y. AND
Z. OR
AA. Order of Evaluation
BB. Conclusion

**VIII. Subqueries, Joins and Unions**
- A. Subqueries
- B. Joins
  1. Table Aliases
  2. Multi-table Joins
- C. Table Aliases
- D. Multi-table Joins
- E. Outer Joins
- F. Unions
  1. UNION ALL
  2. UNION Rules
- G. UNION ALL
- H. UNION Rules
- I. Conclusion

**IX. Inserting, Updating and Deleting Records**
- A. INSERT
- B. UPDATE
- C. DELETE
- D. Conclusion

**X. Managing Data**
- A. Querying a Database
  1. mysqli() Overview
  2. mysqli Methods and Properties
  3. Inserting and Updating Records
  4. mysqli Prepared Statements
- B. mysqli() Overview
- C. mysqli Methods and Properties
- D. Inserting and Updating Records
- E. mysqli Prepared Statements
- F. Conclusion

**XI. PEAR:DB**
- A. Advantages and Disadvantages of PEAR DB
  1. Why use a database abstraction layer?
  2. When not to use a database abstraction layer?
- A. Why use a database abstraction layer?
- B. When not to use a database abstraction layer?
- C. Using PEAR DB

**XII. Authentication with PHP and SQL**
- A. A Database-less Login Form
- B. Conclusion

**XIII. Regular Expressions**
- A. Perl-compatible Regular Expression Functions
  1. preg_match()
  2. preg_replace()
  3. Regular Expression Tester
- B. preg_match()
- C. preg_replace()
- D. Regular Expression Tester
- E. Regular Expression Syntax
  1. Start and End ( ^ $ )
  2. Number of Occurrences ( ? + * {} )
  3. Common Characters ( . \d \D \w \W \s \S )
  4. Grouping ( [] )
  5. Negation ( ^ )
  6. Subpatterns ( () )
  7. Alternatives ( | )
  8. Escape Character ( \ )
- F. Start and End ( ^ $ )
- G. Number of Occurrences ( ? + * {} )
- H. Common Characters ( . \d \D \w \W \s \S )
- I. Grouping ( [] )
- J. Negation ( ^ )
- K. Subpatterns ( () )
- L. Alternatives ( | )
- M. Escape Character ( \ )
- N. Form Validation Functions with Regular Expressions
- O. Conclusion

**XIV. Session Control and Cookies**
- A. Sessions

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1. Configuring Sessions
2. Session Functions

# Intermediate PHP & MySQL

## Course Outline (cont'd)

B. Configuring Sessions
C. Session Functions
D. Cookies
E. Conclusion

**XV. Sending Email with PHP**

A. mail()
   1. Shortcomings of mail()
B. Shortcomings of mail()
C. PHPMailer
D. Conclusion

**XVI. File System Management**

A. Opening a File
   1. fopen()
B. fopen()
C. Reading from a File
   1. fgets()
D. fgets()
E. Writing to a File
   1. fwrite()
F. fwrite()
G. File Locking
   1. flock()
H. flock()
I. Uploading Files via an HTML Form
J. Getting File Information
K. More File Functions
L. Directory Functions
   1. Getting a Directory Listing
M. Getting a Directory Listing
N. Conclusion

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