Table of Contents

Introduction 5
What this Course is About 6
What is the shell? 7
The History of the Shell 9
Bash Shell Notable Features 10
Shell Basics 11
Interactive Shell Usage 12
Files & Directories 13
Filenames, Wildcards, and Pathname Expansion 14
Exercises 17
Common Shell Utilities/Commands 18
Cat 19
tr 20
Grep 23
Find 29
Sort 31
Cut 32
Head & Tail 33
Sed 34
Awk 37
Exercises 39
Handling Input/Output 41
I/O Channels 42
I/O Redirection Operators 44
I/O Redirection Examples 47
Exercises 48
The Here Document Syntax 49
Using Pipelines to Combine Commands 50
Subsequent Command Execution 52
Process Grouping for Redirection 53
Exercises 54
Process Management Basics 55
Characteristics of Processes 56
Managing Processes 58
Job Priorities 60
Exercises 62
Shell Special Characters 63
Special Metacharacters 64
Control Keys 66
Shell Help 68
Shell Command Line Editing 69
Tab Completion 71
History Expansion 73
Exercises 75
Customizing the BASH Environment 76
The User Environment 77
Shell Aliases 79
Shell Options 82

One Copley Parkway, Suite 210 • Morrisville, NC 27560 • Phone: 919.463.0999 • Fax: 866.229.3386
www.otg-nc.com
Copyright ©2001 - 2006 Open Technology Group, Inc.. All rights reserved.
Copying all or part of this manual, or distributing such copies, is strictly prohibited.

Shell Settings Descriptions..... 83
Shell Variables..... 86
Shell Built In Variables..... 88
Other Variables..... 94
Exercises..... 96
Typing Variables with Declare..... 97
Array Variables..... 98
Exercises..... 100
Shell Programming Basics..... 101
Basic Scripting Elements..... 102
Executeables, Shells & Subshells..... 103
Functions versus Scripts..... 105
Command Lookup Order..... 107
Reading Script Arguments..... 109
Using shift to Manipulate Arguments..... 110
Exercises..... 111
Reading Options with getopts..... 112
Exercises..... 114
Performing Variable Operations..... 115
Arithmetic Operations..... 116
Relational Operators..... 119
Using Variable Substitution Operators..... 121
Using Command Substitution Operators..... 123
Exercises..... 124
Flow Control..... 125
What is Flow Control?..... 126
The Test Statement..... 127
Integer Comparison Tests..... 128
String Comparison Tests..... 129
File Tests..... 131
Understanding Exit Status..... 133
Exercises..... 135
The If Control Structure..... 136
Exercises..... 138
The CASE Statement..... 139
Exercises..... 141
The While and Until Loops..... 142
Exercises..... 143
The FOR Loop..... 144
Exercises..... 146
The select Statement..... 147
Exercises..... 149
Performing String & File I/O Operations..... 150
String I/O..... 151
Processing Input with Read..... 155
Exercises..... 156
Working with Signals..... 157
Understanding Signals..... 158
Defining Signal Handlers..... 160
Process ID Variables..... 162
Exercises..... 163
Debugging..... 164

Copyright ©2001 - 2006 Open Technology Group, Inc.. All rights reserved.
Copying all or part of this manual, or distributing such copies, is strictly prohibited.

Debugging Tools.....165
Using Fake Signals.....166
Exercises.....167
Questions?.....168
Where to Get Help.....169

Copyright ©2001 - 2006 Open Technology Group, Inc.. All rights reserved.
Copying all or part of this manual, or distributing such copies, is strictly prohibited.