A Comprehensive Book List for Advanced Study in the Logical Foundations, Semantics and Type Theories of Modern Programming Languages

1. Semantic Theory of Programming Languages

J. Mitchell, Foundations of Programming Languages
D. Schmidt, The Structure of Typed Programming Languages
B. Pierce, Types and Programming Languages
G. Winskell, The Formal Semantics of Programming Languages
C. Gunter, Semantics of Programming Languages
J. Reynolds, Theories of Programming Languages
E.G. Manes, Algebraic Approaches to Program Semantics
J.A. Goguen & G. Malcom, Algebraic Semantics of Imperative Programs
S. Thompson, Type Theory and Functional Programming
J. Palsberg & M. Schwartzbach, Object-Oriented Type Systems
K. Bruce, Foundations of Object-Oriented Languages
P. Mosses, Action Semantics
R. D. Tennent, Semantics of Programming Languages
G. Huet, Logical Foundations of Functional Programming
P-L. Curien, Categorical Combinators, Sequential Algorithms & Functional Programming

2. Set Theory, Category Theory & Universal Algebra

P. Halmos, Naive Set Theory
K. Hrbacek & T. Jech, Introduction to Set Theory, 3rd Ed.
T. Jech, Set Theory, The Third Millennium Edition.
M. Machover, Set Theory, Logic, and Their Limitations
B.A Davey & H.A. Priestley, Introduction to Lattices and Order, 2nd Ed.
B. Pierce, Basic Category Theory for Computer Scientists
A. Asperti & G. Longo, Categories, Types and Structures
D. E. Rydeheard and R. M. Burstall, Computational Category Theory
M. Barr & C. Wells, Category Theory for Computing Science, 3rd Ed.
F.W. Lawvere & S.H. Schanuel, Conceptual Mathematics: A First Introduction to Categories
C. McLarty, Elementary Categories, Elementary Toposes
M. Arbib & E. Manes, Arrows, Structures and Functors: The Categorical Imperative
R. Goldblatt, Topoi: The Categorial Analysis of Logic
J. Lambek and P. J. Scott, Introduction to Higher Order Categorial Logic
R. L. Crole, Categories for Types
P. Cohn, Universal Algebra
F. Baader & T. Nipkow, Term Rewriting and All That

3. Lambda Calculus, Combinatory Logic & Related Calculi

A. Church, The Calculi of Lambda Conversion
H. Curry & R. Feys, Combinatory Logic, Vols. I & II
J. R. Hindley & J. P. Seldin, Introduction to Combinators and Lambda-Calculus
J.P. Seldin & J.R. Hindley, To H.B. Curry: Essays on Combinatory Logic, Lambda Calculus and Formalism
H. Barendregt, The Lambda Calculus
C. Hankin, Lambda Calculi: A Guide for Computer Scientists
R. Amadio & P-L. Curien, Domains and Lambda Calculi
G. Revesz, Lambda-Calculus, Combinators and Functional Programming
F. B. Fitch, Elements of Combinatory Logic
R. Smullyan, To Mock a Mockingbird
M. Abadi & L. Cardelli, A Theory of Objects
G. Castagna, Object-Oriented Programming: A Unified Foundation
R. Milner, Communicating and Mobile Systems: The pi-Calculus

4. Logics, Proof Theory & Type Theory

P.B. Andrews, Introduction to Mathematical Logic: To Truth through Proof, 2nd Ed.
C-L. Change & R.C-T. Lee, Symbolic Logic and Mechanical Theorem Proving
J-Y Girard, Y. Lafont, & P. Taylor, Proofs and Types
R. Hindley, Basic Simple Type Theory
M. Dummett, Elements of Intuitionism, 2nd Edition
B. Nordstrom, K. Peterson & H. Smith, Programming in Martin-Lof's Type Theory
B. Jacobs, Categorical Logic and Type Theory
H. Simmons, Derivation and Computation
P.T. Johnstone, Notes on Logic and Set Theory
P. B. Andrews, Introduction to Mathematical Logic: To Truth through Proof
A. Church, Introduction to Mathematical Logic, Vol 1
A. Heyting, Intuitionism
G. Priest, An Introduction to Non-Classical Logics
M. Huth & M. Ryan, Logic in Computer Science
D. van Dalen, Logic and Structure, 3rd Ed.
D. Prawitz, Natural Deduction
G. Mints, A Short Introduction to Intuitionistic Logic
A. Troelstra & H. Schwichtenberg, Basic Proof Theory, 2nd Ed
R. Smullyan, First-Order Logic
R. Smullyan, Godel's Incompleteness Theorems
E. Nagel & J.R. Newman, Godel's Proof
G. Boolos & R. Jeffrey, Logic, Logic and Logic
J.R. Schoenfield, Mathematical Logic
S.C. Kleene, Introduction to Metamathematics
J.L. Bell & M. Machover, A Course in Mathematical Logic
A. Tarski, Introduction to Logic and to the Methodology of Deductive Sciences, 4th Ed.

5. Foundations and Philosophy of Mathematics

J. Hintikka, The Principles of Mathematics Revisted
W.V. Quine, Philosophy of Logic
S. Haack. Philosophy of Logics
G. Chaitin, The Limits of Mathematics
G. Chaitin, The Unknowable
T. Tymoczko, New Directions in the Philosophy of Mathematics
I. Grattan-Guiness, The Search for Mathematical Roots: 1870-1940
S. Feferman, In the Light of Logic
P. Taylor, Practical Foundations of Mathematics
J.P. Mayberry. The Foundations of Mathematics in the Theory of Sets
W. Hatcher, The Logical Foundations of Mathematics
A. Fraenkel, Y. Bar-Hillel, & A. Levy. Foundations of Set Theory

6. Handbooks & Source Books

S. Abramsky, D. Gabbay & T. Maibum, Handbook of Logic in Computer Science, Vols 1-5.
J.A. Robinson & A. Voronov, Handbook of Automated Reasoning, Vols 1-2.
J. Barwise, Handbook of Mathematical Logic
J. van Heijenoort, From Frege to Godel: A Source Book in Mathematical Logic,
1879-1931

7. Historical & Biographical

M. Davis, Engines of Logic
A. Kenney, Frege: An Introduction to the Founder of Modern Analytic Philosophy
R. Monk, Bertrand Russel (2 vols)
R. Monk, Ludwig Wittgenstein
J. Casti & W. DePauli, Godel: A Life of Logic
J. W. Dawson, Logical Dilemmas: The Life and Work of Kurt Godel
A. Hodges, Alan Turing: The Enigma