Foundational Science and Scientific Literacy with Labs Value: 3 Credits

(Earth Science, Biology, Physical Sciences)

Basic Requirements

Preliminary / Set Up:

* Set up Science and Laboratory Notebook with cover art, dividers, forms, etc.
* Complete “Why in the World Would I Want or Need to Study Lab Science” worksheet

Scripture Study:

* Complete a “God’s View of Science” sheet for each of the following: Biology, Chemistry, and Physics
* Do a “Word Alive” Study for the words “Science” and “Life"
* A Biblical Classification of Life (Berndt)

Reading: (Learning to be documented via short written summaries, oral discussions, and/or written responses to questions.)

* The Dictionary of Science (Usborne *or* DK)
* Read the assigned pages in each Science Encyclopedia (Usborne, DK, *and* Kingfisher)
* How Science Works (Reader’s Digest)
* Dictionary of Cultural Literacy (Hirsch): the chapters regarding Scientific Literacy on Life Sciences, Earth Sciences, Physical Sciences, Mathematics, Medicine and Health
* Genesis One (Weaver)
* Explorations in Biology (Julicher)
* Exploring Planet Earth (Tiner)
* The World of Biology (Tiner)
* The World of Chemistry (Tiner)
* The World of Physics (Tiner)
* Fearfully and Wonderfully Made (Brandt)
* Resolve Seven Deadly Stresses (IBLP)
* Unlocking the Mysteries of Creation (Petersen)
* Of Pandas and People (Davis)
* In the Beginning (Walt Brown)
* Read and discuss the documents in your Source Readings binder (see individual science syllabi)
* Current Events: Find and explain 10 clippings on science topics in the news

Lab Activities: (with associated Lab Notebook for appropriate documentation)

* Do 10 Nature sketches
* Learn and test your rock identification skills
* Complete “World of the Microscope” study
* Learn to type your blood
* Complete a diagram of each major system of the body for Human Anatomy and Physiology
* Learn to prepare and utilize Petri dishes and complete basic microbiology and bacteria experiments
* Complete between 4 and 8 dissections as outlined in Biology coursework above
* Complete the experiments contained in the ChemLab and MicroChem kits
* Understand the chemistry involved with food
* Complete the experiments contained in the General Physics kit

Science Seminars and Merit Badges:

* Interview a scientist
* Complete 3 science-related Merit Badges of your choice

Field Trips:

* Tour a science-related facility in a field you may be interested in
* Conduct a field study for younger students in a scientific area (ex: plan and execute an archaeological dig)

CD-Rom and Video Explorations:

* Biology 101 DVDs, Chemistry 101 DVDs, and Physics 101 DVDs
* View 6 science DVDs from multiple disciplines and write a short summary of each

Grading Standards, per Term

To earn a “C” – Student must:

Complete 120 Hours (or logged entries) for 1 credit

Complete course material listed above (at the rate of approximately 1/3 per term)

Quality/Neatness/Attitude standard of “Average”

Complete one science project of own choosing (with teacher approval)

To earn a “B” – Student must: Do the above, plus:

Complete an additional 15 hours for a total of 135 Hours/Entries for 1 credit

Write a short report on topic of own choosing (with teacher approval)

Quality/Neatness/Attitude standard of “Good”

Complete one additional science project in another scientific discipline

To earn an “A” – Student must: Do the above, plus:

Complete an additional 15 hours for a total of 150 Hours/Entries for 1 credit

Write a research paper on topic of own choosing (with teacher approval)

Quality/Neatness/Attitude standard of “Excellent”

Oversee a younger child’s science project, offering help and expertise as required

Hour Check Chart for Sciences

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 |
| 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 |
| 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 |
| 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 |
| 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 |
| 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 |

Term:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 |
| 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 |
| 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 |
| 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 |
| 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 |
| 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 |

Term:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 |
| 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 |
| 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 |
| 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 |
| 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 |
| 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 |

Term:

Biology Resources:

* Biology 101 DVD set, syllabus, and guide book
* Logic Stage Biology (DuBois, ClassiQuest)

Including readings and experiments from:

* + - The DK Science Encyclopedia
    - The Kingfisher Science Encyclopedia
    - The Usborne Internet Linked Science Encyclopedia
    - The Usborne Illustrated Dictionary of Science
    - Biology for Every Kid (Van Cleeve)
    - Botanical Discoveries Kit
    - Miscellaneous materials from Home Science Tools

Additional experiments:

* + Experiences in Biology (Julicher, Castle Heights)
  + A+ Projects in Biology (Van Cleeve)
  + Microscope Adventure (Kym Wright) and The World of the Microscope (Usborne)

Biology Readings Notebook:

* A Biblical Classification of Life, Chard Berndt

Articles by Chard Berndt:

* + - Energy and God’s Power
    - Higher Purposes in Creation
    - Mankind Set Apart
    - Reclaiming the High Sierra
    - The Dividing of man
    - The Unified Owph: Birds and Insects in Creation
    - Does Ruach Require Active Respiration
    - Fundamental Unit of Taxonomy
    - Human Metamorphosis
    - Pre-Fall Mortality: Aquatic Autotrophs
    - The Metamorphosis Misnomer
    - Response to TJ Review

Creation: Heart of Wisdom Unit and Resources

* + - In the Shadow of Darwin, Wayne Jackson and Bert Thompson
    - The Global Flood of Noah, Bert Thompson
    - The Case for the Existence of God, Bert Thompson
    - Genesis and the Origin of Coal and Oil, Trevor Major

Earth Science Resources:

* BJUP Earth Science Text
* BJUP Earth Science Student Activities Manual
* Exploring Planet Earth, Tiner
* A+ Projects in Earth Science, Van Cleeve
* Properties of Ecosystems, Lawrence (AiG color edition)

Physical Sciences (Chemistry and Physics) Resources:

* Chemistry 101 DVDs
* Physics 101 DVDs
* ClassiQuest Science Guides, DuBois (if and when available)
* The DK Science Encyclopedia
* The Kingfisher Science Encyclopedia
* The Usborne Internet Linked Science Encyclopedia
* The Usborne Illustrated Dictionary of Science
* A+ Projects in Chemistry, Van Cleeve
* A+ Projects in Physics, Van Cleeve
* The Mystery of the Periodic Table, Bendick
* Elements of Faith, Duncan
* Handy Physics Answer Book, Gundersen
* Genesis One
* Skilcraft’s Chemlab 1100
* Micro-Chem Kit
* Elemento! (game)
* Light: Heart of Wisdom Unit Study (with accompanying resources)
* Energy: Heart of Wisdom Unit Study (with accompanying resources)