Bike SA Inc
Advanced Bike Maintenence Course

# Course outline

***Please familiarise yourself with this document to ensure this course structure will suit your individual requirements before submitting your registration.***

*Bike SA - More South Australians cycling, in safer, healthier communities.*

**Reference Manual: Storey M., The Bike Book - Complete Bicycle Maintenance, 6th edition, Haynes Publishing, 2012.**

| Bicycle SA - Advanced Bicycle Maintenance Course – Program Outline | | | | 24 Hours Duration |
|---|---|---|---|---|
| **Week 1** | **Topic** | **Manual Page Ref** | **Theory** | **Practical Tasks** |
| **Session 1.A**<br>3.5 Hours | Introduction | n/a | Course overview<br>Group introduction and working group allocation. | Workshop orientation, facilities identification |
| | Workshop safety | n/a | Workshop safety & OH&WS | OH&WS walkthrough, cleaning station procedure, emergency procedure, hazardous chemicals procedure |
| | Tools & equipment | 20 – 25 | Workshop tools overview | Torque wrench |
| | Frame design & bike fit | 6 – 15, 158 – 159 | Bicycle types<br>Aerodynamic v comfort<br>Frame dimensions and angles | Basic bike fit principles |
| | Cleaning | 36 – 39 | Cleaning materials and their application | |
| | External Lubrication | 40-41 | Lube types<br>Lubrication Routine | Component lubrication |
| | Chains | 78 – 83 | Removal / repair tools<br>Chain parts<br>Measuring wear<br>Chain breaking and joining<br>Measuring chain length<br>Chain care:<br>• Cleaning<br>• Lubrication | Chain wear measurement<br>Chain breaking<br>Quick links and pin replacement<br>Cleaning and lubrication. |
| Lunch Break | | | | |
| **Session 1.B**<br>3.5 Hours | Spokes | 154 – 155 | Spoke types & profiles<br>Spoke tension<br>Spoke replacement drive side<br>Spoke replacement non drive side<br>Emergency repair | Replace spoke drive side |
| | Wheel truing | 154 – 155 | Hub design<br>Rim design<br>Cross patterns<br>Wheel truing<br><br>Adjustment tools | True the wheel laterally and radially<br>Correct spoke tension |

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| | Suspension tuning (front) | 166 - 169 | Rebound damping adjustment<br>Compression adjustment<br>Setting Preload and adjustment<br>Care and routine external maintenance | Adjust and correct damping (front)<br>Adjust and correct compression (front)<br>adjust and Set Preload (front) |
| Pre Reading in preparation for next session | | | | |
| **Week 2** | **Topic** | **Manual Page Ref** | **Theory** | **Practical Tasks** |
| **Session 2.A**<br>3.5 Hours | Rim Brakes | 44 – 53, 60 – 63, 68 – 71, 86 – 87<br><br>56-59<br><br>60 - 61 | Brake types:<br>• Dual pivot<br>• V brake<br>Removal / repair tools<br>Parts, ferules & adjustment systems<br>Brake cable inner and outer routing<br>Brake cable replacement:<br>• Straight handlebars<br>• Drop handlebars<br>Lever position adjustment :<br>• Straight handlebars<br>• Drop handlebars<br>Pad alignment | Replace inner & outer brake cables<br>Service and inspect brake levers<br>Lever setup position and reach adjustment<br>Pad removal, cleaning, replacement and alignment<br>Assess rim wear / condition |
| | Cable Disc Brakes | 54 – 55; 64 – 65<br><br>67 - 67 | Removal / repair tools<br>Parts, ferules & adjustment systems<br>Brake cable inner and outer routing<br>Brake cable replacement<br>Rotor removal<br>• Centre lock<br>• 6 bolt Int Standard<br>Rotor replacement<br>Rotor realignment<br>Pad replacement<br>Pad alignment | Replace inner & outer brake cables<br>Service and inspect brake levers and callipers<br>Lever setup position and reach adjustment<br>Pad removal, cleaning, replacement<br>Assess rotor wear / condition<br><br>Rotor removal<br>Rotor replacement |
| Lunch Break | | | | |
| **Session 2.B**<br>3.5 Hours | Gear Shifters | 86-87; 110 - 111 | Gear shifter types<br>Removal / repair tools<br>Gear shifter:<br>• Parts<br>• Construction<br>• Setup<br>• Adjustment | Inspect, service and lubricate |

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| | Gears front | 94 - 95 | Front derailleur types<br>Removal / repair tools<br>Front derailleur:<br>• Parts<br>• Construction<br>• Setup<br>• Adjustment<br>Gear cable<br>• Cable types<br>• Cable parts | Remove and replace front derailleur<br>Inspect, service, lubricate, and re-install<br>Replace gear inner and outer cables<br>Adjust limit stops<br>Cable adjustment and tension |
| | Gears rear | 88 – 89; 92 - 93; 94; 118 - 123 | Rear derailleur types<br>Removal / repair tools<br>Rear derailleur hanger alignment<br>• Tools<br>Rear derailleur<br>• Parts<br>• Construction<br>• Adjustments<br>• Indexing<br>Gear cable:<br>• Types<br>• Parts | Remove derailleur<br>Inspect, service, lubricate, and re-install<br>Replace gear inner and outer cables<br>Adjust limit stops<br>Cable adjustment and tension |
| | | | Pre Reading in preparation for next session | |
| **Week 3** | **Topic** | **Manual Page Ref** | **Theory** | **Practical Tasks** |
| **Session 3.A**<br>3.5 Hours | Cassette | 96 - 97 | Cassette systems<br>• Screw on<br>• Splined<br>Assessing wear<br>Removal tools | Cluster removal, inspection and replacement |
| | Chainrings | 100 - 109 | Chain rings<br>Assessing wear<br>Removal tools | Chain ring removal, inspection and replacement |
| | Crankset | 100 - 109 | Crankset systems<br>• Square taper<br>• Splined<br>• External hollow axel (Shimano Hollowtec II only)<br>Removal tools<br>Lubrication | Crankset removal, inspection and replacement |

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| | Pedals | 140 - 145 | Pedal systems<br>• Quick release<br>• Platform<br>Adjustment of SPD systems<br>Removal tools<br>Lubrication | Pedal removal, inspection and replacement |
| Lunch Break | | | | |
| **Session 3.B**<br>3.5 Hours | Bottom brackets | 112 – 117<br>185 (standards) | Bottom bracket systems<br>• Cartridge bearing<br>• Hollow axel<br>Removal tools<br>Lubrication | Bottom bracket removal, inspection, and replacement |
| | Hubs | 148 – 153 | Hub parts<br>Bearing systems:<br>• Sealed (cartridge bearing)<br>• Open bearing<br>• External sealed hollow axel (Shimano Hollowtec II only)<br>Removal tools<br>Preload adjustment | Disassemble, reassemble, inspect and adjust front and rear hub (Shimano) |
| | Steering | 128 – 133, 162 - 165 | Headsets systems:<br>• Threaded<br>• Non threaded systems (Aheadset)<br>Headsets parts<br>Removal tools<br>Adjustment | Disassemble, reassemble, inspect and adjust:<br>Threaded and non threaded systems |
| **End** | | | | |