# E-Bike Training Facilities

## Introduction

The Light Electrical Vehicle Association (LEVA) www.levassociation.com E-Bike Training and Certification Course has been taught at more than 10 locations since 2012. The course consists of both lectures and a hands-on workshop. This appendix describes examples of facilities used for the training. Facilities at the following locations are described.

- Danville VA Community College – Regional Center for Advanced Technology and Training (DCC-RCATT)
- Appalachian State University ASU Boone NC
- Gerhardt Cycles Winston-Salem NC
- India Research and Development Center for Bicycle and Sewing Machine (RDCBSM)

## Facility Recommendations

The ideal teaching facility has a lecture area and a hands-on workshop in the same room. A safe area to ride E-bikes should be close by. The following features should be provided.

- Projection system or large screen video display for slide and video presentations
- Sound system for video presentations
- Dimmable light system
- White board and markers
- Connection to the internet
- Tables and chairs for students
- Table name signs for students
- Tables for display of E-Bike parts
- Table for refreshments
- Work stations for hands-on soldering, wiring connector crimping and applying heat shrink
- Table or work station for battery test equipment and charging
- Table or work station for diagnostic equipment
- E-Bikes
- E-Bike stand
- E-Bike tools
- Laptop computer for battery testing and E-Bike diagnostics
- Safety glasses

- Bike helmets

**Curriculum**

The training consists of approximately 50% classroom sessions and 50% hands-on training. The Electric Bike Maintenance Manual (EBMM) ISBN 978-0-9905228-0-5 written by Dr. Don J. Gerhardt is the textbook for the course. It is provided to each student on a USB drive. The EBMM contains over 1000 pages. It also contains instructional videos. The EBMM contains a list of tools required for the training. The current LEVA training and certification course consists of 4 levels. The following topics are covered.

**Electric Bike Maintenance Manual** - **Contents**



## Facility Examples

### Danville VA Community College - Regional Center for Advanced Technology and Training

www.dcc.vccs.edu

DCC-RCATT 121 Slayton Ave, Danville VA 24541

The LEVA training course was first developed and taught at the DCC-RCATT.

DCC-RCATT electric vehicles

DCC-RCATT E-Bike class


Organic Transit ELF

Dr Don Gerhardt TV interview on LEVA course

DCC-RCATT training room


DCC-RCATT training room

DCC-RCATT LEVA founder Ed Benjamin at table

Dr Jack Martin teaching LEVA E-Bike class

DCC-RCATT LEVA class

Training on Organic Transit ELF

DCC-RCATT electronics lab

DCC-RCATT Tektronic scopes and Fluke meters

DCC-RCATT PACE solder stations

DCC-RCATT E-Bike Battery training stations


DCC- RCATT electrical systems training station

DCC-RCATT Motor control training stations

## Appalachian State University

www.appstate.edu ASU Katherine Harper Hall, 397 Rivers Street, Boone, NC 28608

The LEVA E-Bike training is included in a semester long course on E-Bikes, Light Electric Vehicles, Advanced Battery Technology and Solar Energy. The course is taught by LEVA certified instructor Dr. Jack Martin.

ASU Dr Jack Martin with Organic Transit ELF

ASU LEVA course

ASU solar charging of ELF

ASU LEVA course

ASU Dr Jack Martin with camera

Founder of Outrider USA E-Trikes

ASU E-Bike class with E-Trike and solar panels

ASU Don Gerhardt on E-Trike. Dr Jack Martin on right.

E-Bikes for ASU class

ASU E-Bike class

## Gerhardt Cycles Winston-Salem NC

www.GerhardtCycles.com

www.wsmixxer.org www.visitwinstonSalem.com

1375 North Martin Luther King Junior Drive Winston-Salem NC 27101

MIXXER WS is a new state of the art makers space in Winston-Salem NC. It is within 2 blocks of the Gerhardt Cycles E-Bike warehouse.

WS MIXXER front view


WS MIXXER side view


WS MIXXER work area


WS MIXER work area


WS MIXXER machine shop


WS MIXXER wood working shop

WS MIXXER electronic lab bench

WS MIXXER rapid prototyping bench

## India Research & Development Centre for Bicycle & Sewing Machine (RDCBSM)

www.bsrdindia.com

B-38-39, Phase-V, Focal Point, Ludhiana, India 141010

RDCBSM is a large campus of buildings in Ludhiana India for research, manufacturing development, testing and training on bicycles. Ludhiana is the center of bicycle and bicycle parts manufacturing in India. The E-Bike training at RDCBSM is supported by the United Nations Industrial Development Organization (UNIDO).

Introduction by RDCBSM General Manager H. S. Bains

Dr. Don J. Gerhardt conducting training

Dr Don J. Gerhardt with the five team leaders

Class photo – RDCBSM UNIDO LEVA Training

Battery Testing Training Station

Battery Testing

Battery Test Graph

Soldering, Heat Shrink and Connector Crimping Training Equipment

E-Scooter in RDCBSM Lobby

Folding E-Bike in Training Room

Bosch E-Bike Diagnostic Tool

Bosch E-Bike Diagnostics

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