

1/28/2016 DATE  
 \_\_\_\_\_ REQUIRED COURSE  
 \_\_\_\_\_ X \_\_\_\_\_ ELECTIVE COURSE

Business DIVISION  
 \_\_\_\_\_ X \_\_\_\_\_ NEW COURSE  
 \_\_\_\_\_ REVISION

**LAKE LAND COLLEGE**  
**Course Information Form**

**COURSE NUMBER** ITT 063 **TITLE** Innovation I  
**SEM CR HRS** 3 **LT HRS** 2 **LAB HRS** 2 **SOE HRS** \_\_\_\_\_ **ECH** \_\_\_\_\_  
**COURSE PCS #** \_\_\_\_\_ (Assigned by Administration)

**PREREQUISITES:** \_\_\_\_\_

**Catalog Description** (40 Word Limit): This course examines the history, technology,  
and progression of innovation and innovative ideas in IT, robotics, electronics, and DIY makerspace  
environments. The tools and techniques used in the innovation lab will be explored.

List the Major Course Segments (Units)	Contact Lt Hrs	Contact Lab Hrs
Innovation history and fundamentals	6	
Arduino basics	4	8
Raspberry Pi basics	3	4
Soldering and project electronics fundamentals	2	2
Digital fabrication and 3D printing	3	4
Robotics	4	2
Simulators and gaming systems	2	4
Virtual reality	4	4
Augmented reality	2	2

**EVALUATION:** **Quizzes** \_\_\_\_\_ **Exams** \_\_\_\_\_ **Oral Pres.** X **Papers** \_\_\_\_\_  
**Lab Work** X **Projects** X **Comp Final** \_\_\_\_\_ **Other** \_\_\_\_\_

**eBook Textbook Library:**

*Adventures In Raspberry Pi*, Philbin, 2014

*All New Electronics Self Teaching Guide*, Kybett & Boysen, 2008

*Arduino for Dummies*, Nussey, 2013

*Arduino Workshop : A Hands-On Introduction with 65 Projects*, Boxall, 2013

*C Programming for Arduino*, Bayle, 2013

*Exploring Arduino : Tools and Techniques for Engineering Wizardry*, Blum, 2013

*Fabricated : The New World of 3D Printing*, Lipson & Kurman, 2013

*Instant OpenCV Starter*, Dalal & Patel, 2013

*Kinect for Windows SDK Programming Guide*, Jana, 2012

*Learning Python with Raspberry Pi*, Bradbury & Everard, 2014

*Mastering OpenCV with Practical Computer Vision Projects*, Baggio & Emami, 2012

*OpenCV Computer Vision with Python*, Howse, 2013

*Practical Interfacing in the Laboratory : Using a PC for Instrumentation, Data Analysis and Control*, Derenzo, 2003

*Raspberry Pi for Secret Agents*, Sjogelid, 2013

*Raspberry Pi Home Automation with Arduino*, Dennis, 2013

*Raspberry Pi Media Center*, Nazarko, 2013

*Raspberry Pi Networking Cookbook*, Golden, 2013

*Raspberry Pi Projects*, Robinson & Cook, 2013

*Raspberry Pi User Guide (2nd Edition)*, Upton & Halfacree, 2013

*Teach Yourself VISUALLY Raspberry Pi*, Wentk, 2014

Major Course Segment	Hours	Learning Outcomes
		The student will be able to:
Innovation history and fundamentals	6	Identify innovative technologies and understand the history of the DIY movement.
Arduino basics	12	Understand the basic concepts of the Arduino and demonstrate proper basic configuration through projects.
Raspberry Pi basics	7	Understand the basic concepts of a Raspberry Pi and demonstrate proper basic configuration through projects.
Soldering and project electronics fundamentals	4	Learn basic soldering skills and demonstrate a rudimentary level of knowledge of project electronics.
Digital fabrication and 3D printing	7	Explain the fabrication process and be able to design, convert and 3D print objects in the innovation lab.
Robotics	6	Understand the uses for robotics in a variety of situations and demonstrate basic robotic knowledge.
Simulators and gaming systems	6	Understand the variety of gaming systems and simulators that are available and demonstrate how the technology involved can be utilized.
Virtual reality	8	Demonstrate a knowledge of different VR systems including Google Cardboard and the Oculus Rift and explain the accompanying technology.
Augmented reality	4	Understand the possible uses for AR and be able to explain how lab projects could utilize the technology.

**Course Outcomes:** At the successful completion of this course, students will be able to:

- Explain the basic concepts of innovation and how creativity is harnessed.
- Demonstrate basic skills on equipment in the innovation lab.
- Develop a project from concept to completion.