

Customizing Students' Learning Experience

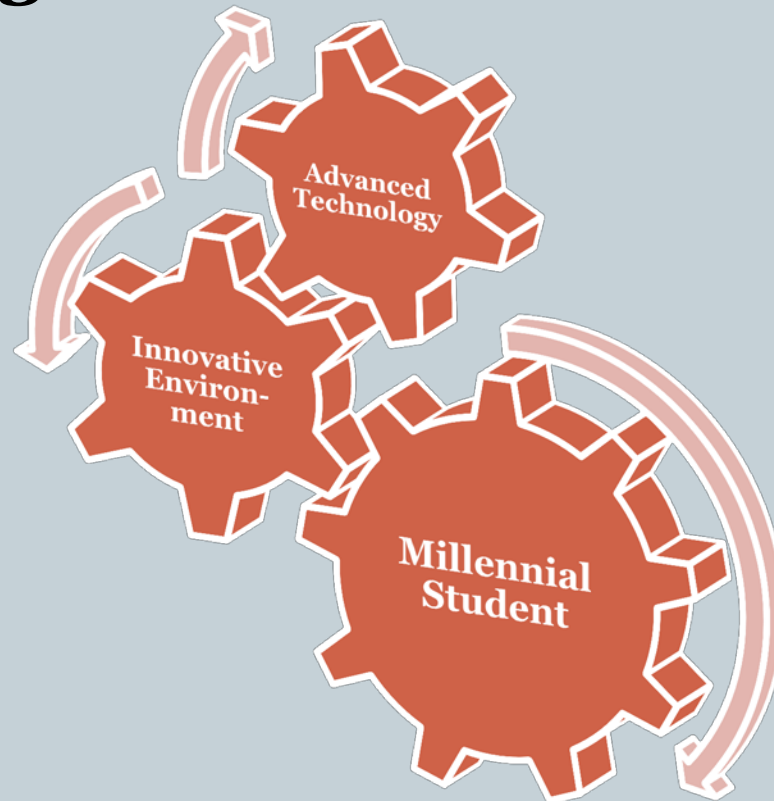


COMPETENCY-BASED MODULAR APPROACH IN AIT DATABASE COURSES

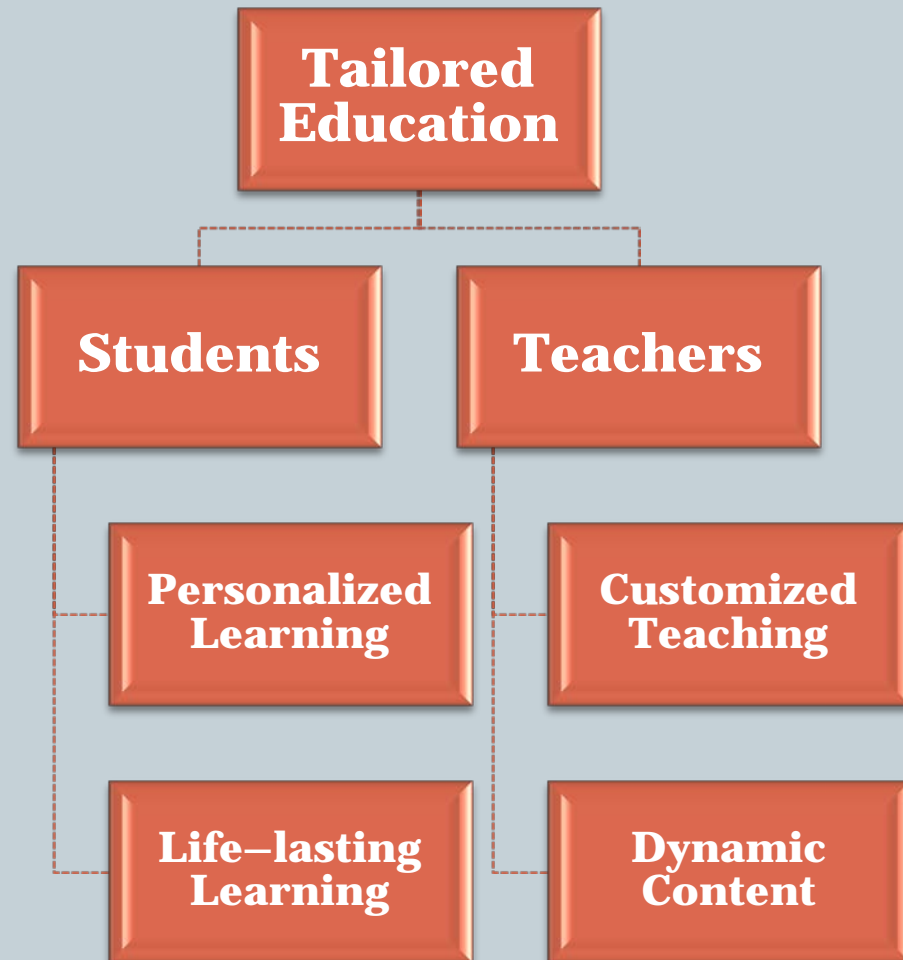
Achieving Learning



- **Next Generation Learners**
- **Emerging Technologies**
- **Advanced Tools**



New Education Paradigm



Proposed Methodology



Creating a customized learning experience for each student using a competency-based modular approach

- **Small scale - Single course**
- **Large scale – Degree completion**

Implementation



Proposed methodology was successfully implemented in two AIT database courses in Fall 2013

- **IT 314: Database Management (fully)**
- **IT 214: Database Fundamentals (partially)**

Experiment Setting



Participants:

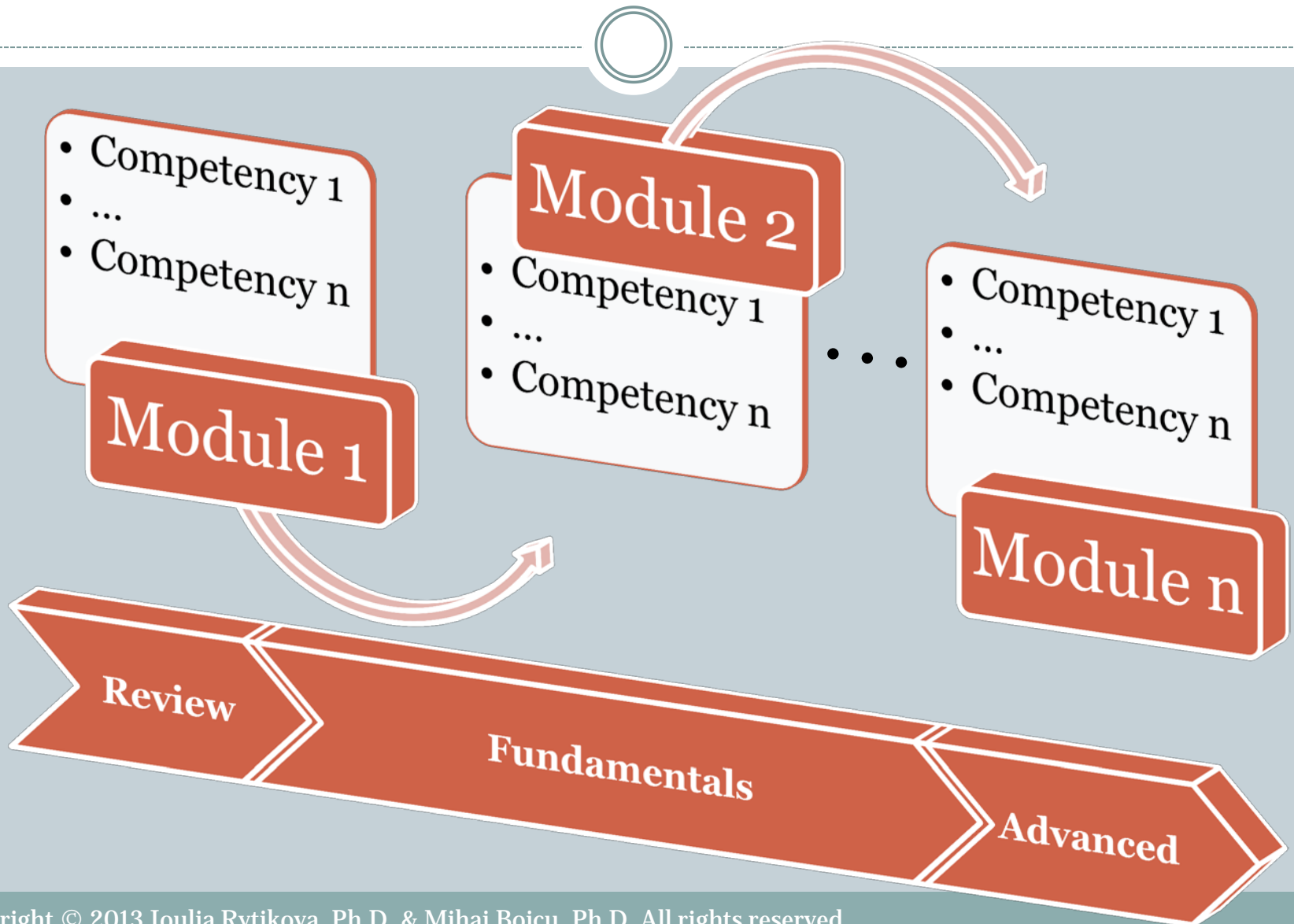
All Students Taking IT 314 In 2013
(both online and in class)

Spring 2013	Fall 2013	Total
42 students	40 students	82 students

Proposed hypothesis:

H₁: New methodology improves students' performance

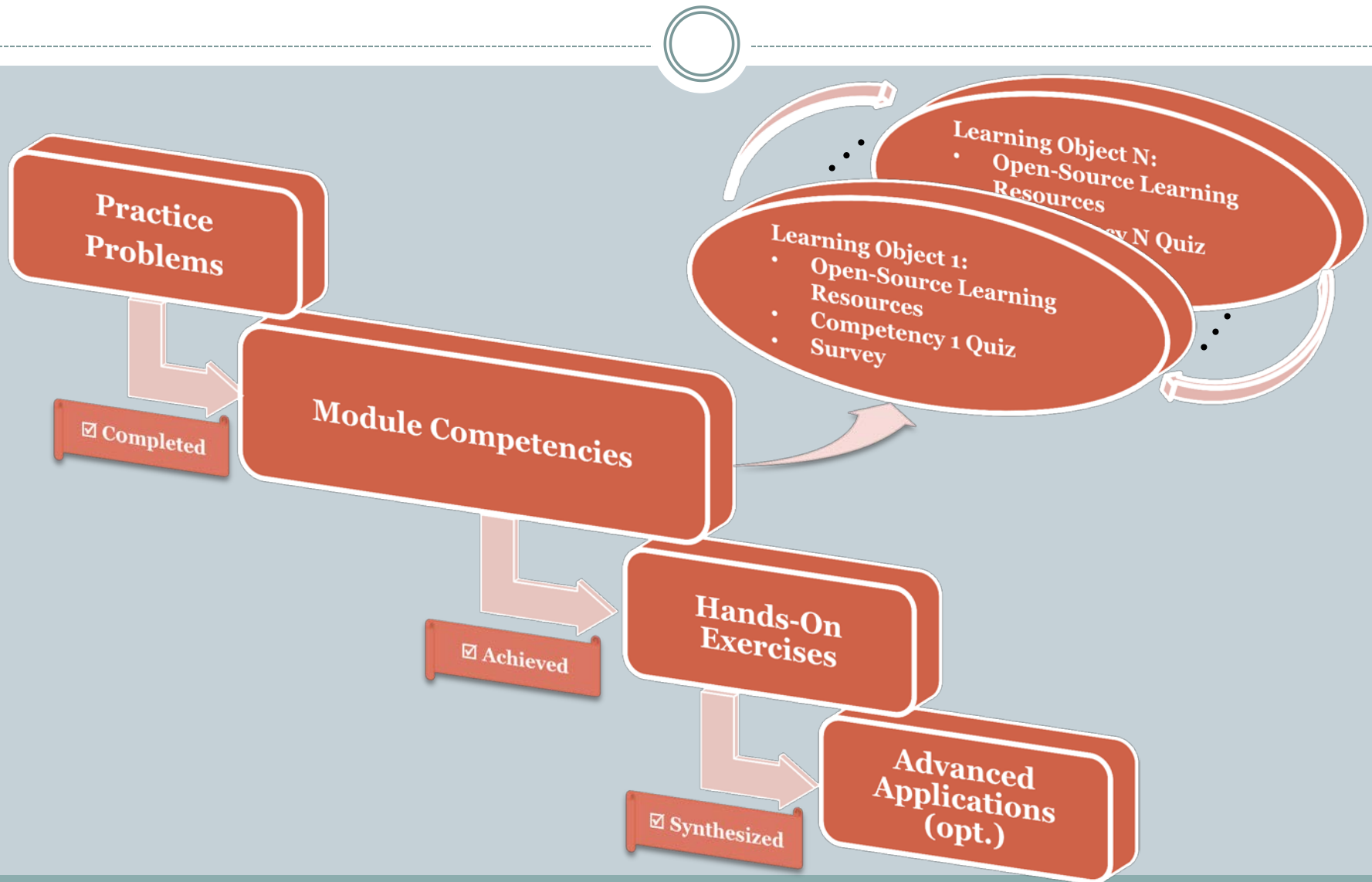
Course Organization



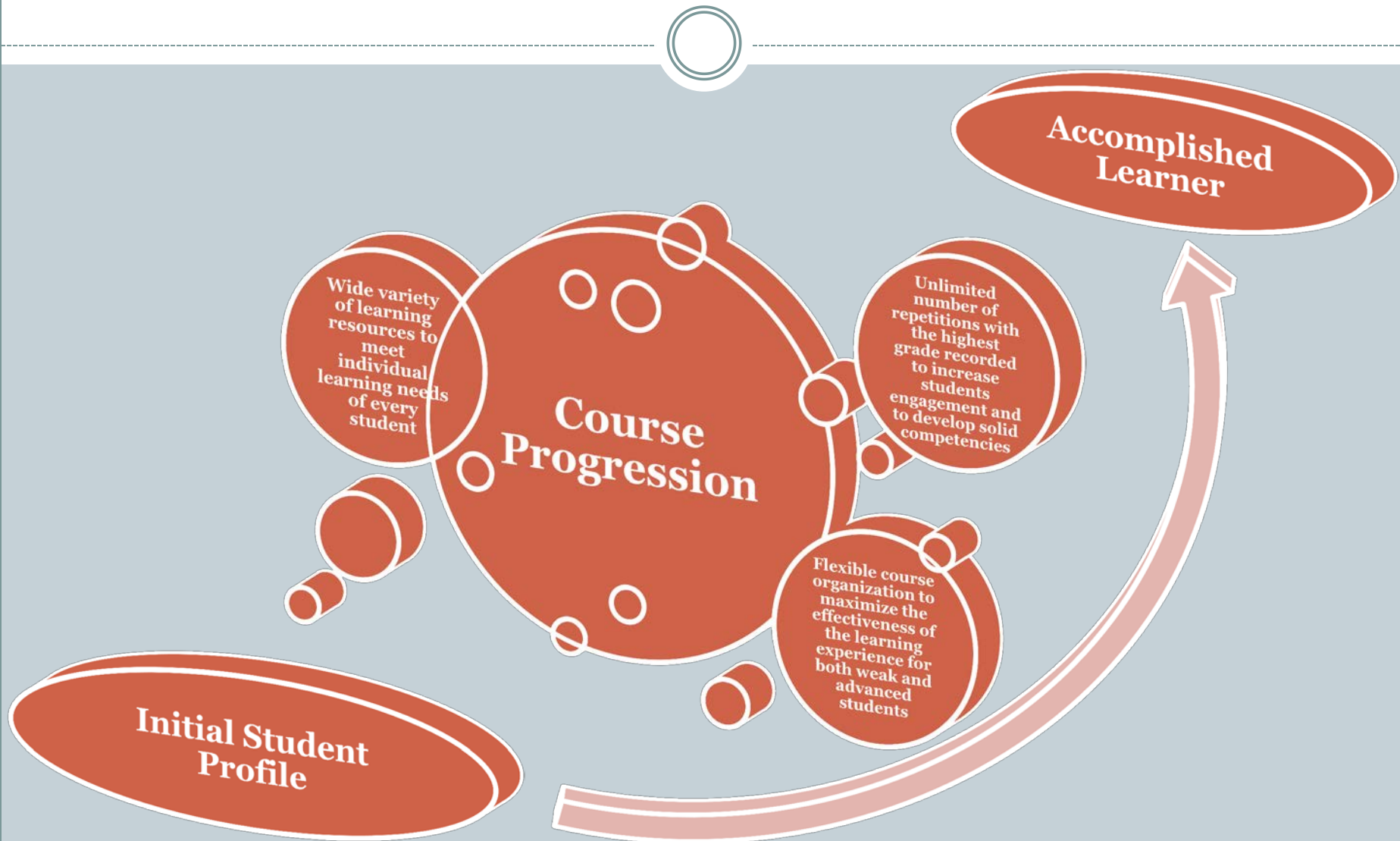
Module Organization



Personalized Module Progression



Customized Learning Experience



Preliminary Results



- **The one-way analysis of variance (ANOVA) was used to determine if there is a significant difference between the Review Quiz means of the two groups of students:**
 - Spring 2013 IT 314 students
 - Fall 2013 IT 314 students
- **ANOVA results indicate a statistically significant difference in the two means with a 90% confidence level**

Analysis of Variance (One-Way)						
Summary						
<i>Groups</i>	<i>Sample size</i>	<i>Sum</i>	<i>Mean</i>	<i>Variance</i>		
Spring 2013	42	3,450.	82.14286	690.41812		
Fall 2013	40	3,610.	90.25	140.96154		
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p-level</i>	<i>F crit</i>
Between Groups	1,346.57666	1	1,346.57666	3.18673	0.07803	2.76931
Within Groups	33,804.64286	80	422.55804			
<i>Total</i>	<i>35,151.21951</i>	<i>81</i>				

Next Steps

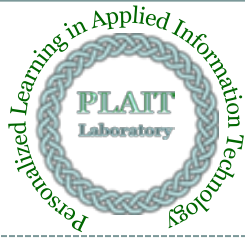


- **Complete IT 314 course development:**
 - Process and analyze data on both students' performance and course organization
 - Create an automatic response system to help instructors monitor students' performance and guide their progress
 - Add a new module for students pursuing an advanced track
- **Continue re-development of IT 214 using the proposed approach**
- **Apply the proposed approach on all AIT database courses to customize the completion of the Database Technology and Programming concentration for the AIT students**
- **Extend the model to other STEM domains**

Conclusion



- **Customized Learning Experience using Competency-based Modular Approach is a potential solution to various challenges that higher education faces today**
- **Initial implementation of the proposed model and preliminary results indicate a significant improvement in students' performance in AIT database courses**
- **Proposed methodology may be extended and applied on a larger scale**



PLAIT Laboratory



Thank you for you time and attention!

If you have any questions, please contact us at any time

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