Fall 2014 Independent Study Proposal

**Statement of Purpose**

The purpose of this Independent Study is to acquire a deep understanding of Test Driven Development by conducting thorough research and using a very hands on approach. To accomplish this task I will be be utilizing the latest technology using, Microsoft’s Visual Studio 2013 and the ASP.NET 4.5 architecture. Along with research and individal testing I will also build an ASP.NET web application from scratch using the Test Driven Development approach.

The primary purpose of building my own web application will be to discover how to implement unit, UI, and performance testing from the beginning stages of development, rather than trying to test all proper use-cases after the fact. I believe that being able to speak to a strategy like TDD, will not only provide value to myself in my future projects, but give me and upper hand when speaking to potential employers about careers in the future.

**Goals and Objectives**

The beginning stages of this Independent Study will begin with intensive research into the automated testing abilities of Visual Studio 2013. The research will include testing small applications as well as building applications from the ground up in order to discover the full capabilities of automated testing inside of Visual Studio.

If in my research if I find that Visual Studio does not have the testing capabilities that I am looking for, I will also make suggestions for other tools and resources and test those instead. However if I find that Visual Studio does have the tools capable then I will continue down that track and begin building my own web based ASP.NET application from scratch.

Along with research and hands on experimental studies I also have the opportunity of working alongside three experienced web developers at Orbital Shift. Peter Clough, Mike Spritzer and Kevin O’Reilly are all graduates of the University of Montana Computer Science department and have agreed to take me under their wing and help guide me in my project. With their guidance I hope to not only provide value to their business but also be exposed to a professional development environment.

**Specific Tasks**

* Intensive research into Visual Studio’s automated testing resources
* Further exploration of development in C#, and web based ASP.NET applications
* Development of small mock applications to get a grasp of automated testing capabilities inside of Visual Studio
* Create unit tests for already functional web applications
* Creation of a fully functional ASP.NET web application using the Test Driven Development process

**Specific Books and Resources**

* Professional Test Driven Development with C#: Developing Real-World Applications with TDD - by James Bender, Jeff McWherter
* Pro ASP.NET 4.5 in C# - by Adam Freeman, Matthew MacDonald, Mario Szpuszta
* Beginning ASP.NET 4.5 in C# - by Matthew MacDonald
* Kevin O’Reilly, Peter Clough and Mike Spritzer at Orbital Shift

**Weekly Timeline**

Week 1 - Meet with Mr. Henry to discuss Independent study and submit proposal for approval

Week 2 - Research into Visual Studio automated testing - Weekly follow up with Mr. Henry about status of project

Week 3 - Research into Visual Studio automated testing - Weekly follow up with Mr. Henry about status of project

Week 4 - Research into Visual Studio automated testing - Weekly follow up with Mr. Henry about status of project

Week 5 - Research into Visual Studio automated testing - Weekly follow up with Mr. Henry about status of project

Week 6 - Turn in first paper discussing what I’ve found from my research into Visual Studio’s automated testing abilities. Make recommendations about continuing to us VS or going a different route.

Week 7 - Begin working on my ASP.NET web application - Weekly status update

Week 8 - Work on ASP.NET web application - Weekly status update

Week 9 - Work on ASP.NET web application - Weekly status update

Week 10 - Work on ASP.NET web application - Weekly status update

Week 11 - Work on ASP.NET web application - Weekly status update

Week 12 - Work on ASP.NET web application - Weekly status update

Week 13 - Work on ASP.NET web application - Weekly status update

Week 14 - Work on ASP.NET web application - Weekly status update

Week 15 - Give Presentation to CS Department on my Independent Study