



REQUEST FOR REVISION OF STANDARDS

O.M
 L&I apprenticeship coordinator

TO: Washington State Apprenticeship & Training Council

From: WTIA WIAC (Program 1982)

(NAME OF PROGRAM STANDARDS)

Please update our standards to reflect the following changes:

Additions are Underlined
 Redactions are ~~Struck Through~~

<u>Occupational Objective(s)</u>	<u>SOC#</u>	<u>Term</u>
<u>PROJECT MANAGER</u>	15-1199.09	<u>2000 HOURS</u>
<u>SOFTWARE DEVELOPER</u>	15-1133.00	<u>2000 HOURS</u>
<u>WEB DEVELOPER</u>	15-1134.00	<u>2000 HOURS</u>

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VIII. WORK PROCESSES:

C. Project Manager

APPROXIMATE HOURS

1. Planning, executing and closing projects.....800
 - Define project purpose, requirements and scope
 - Create comprehensive project and work plans to include milestones and deliverables
 - Manage and track project progress timelines
 - Create and track project resource plans and budgets
 - Complete project post mortem and evaluations upon project completion

2. Project risk & quality management.....400
 - Perform qualitative and quantitative risk analysis
 - Develop appropriate risk identification, mitigation and monitoring strategies
 - Utilize quality assurance and quality control tools and techniques

3. Leading & managing projects.....400
 - Identify and apply appropriate leadership and management strategies and techniques
 - Work with and effectively communicate with technical and non-technical subject matter experts
 - Analyze project barriers such as technology and schedule pressures, in order to develop procedures and policies which effectively overcome those barriers

4. Communicating with project stakeholders.....400
 - Serve as the central point of communication in the execution of projects
 - Determine project stakeholders communication styles and establish techniques for effective communication and influence
 - Assess project communication needs and create appropriate communication strategies tailored to specific projects

- Utilize the various communication channels available and communicate clearly via the appropriate channel
- Ensure that project decisions, action items and deliverables have been properly documented and shared with stakeholders

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TOTAL HOURS 2000

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D. Software Developer

1. Project Definition.....100
 - Identify and capture stakeholder requirements using customer interviews and surveys
 - Build multiple use cases to describe each action that a user will take in the new system.
 - Understand and contribute to requirement specification documents

2. Software Design.....300
 - Work with stakeholders to understand requirements
 - Specify and scope hardware and system requirements
 - Identify and mitigate security threats and vulnerabilities that may arise from interactions with other systems, external and legacy code

3. Development and Implementation.....800
 - Develop and write software code
 - Perform unit testing and fix errors or bugs

4. Software Testing.....600
 - Work with development team to create test plans
 - Implement test cases
 - Find & fix bugs

5. Deployment and Maintenance.....200
 - Perform training for end users
 - Evaluate and fix bugs that may become apparent after product deployment

TOTAL HOURS 2000

E. Web Developer

1. Project Definition.....100
 - Identify and capture stakeholder requirements using customer interviews and surveys
 - Build multiple use cases to describe each action that a user will take in the new system.
 - Understand and contribute to requirement specification documents

2. Web Design.....300
 - Work with stakeholders to understand requirements
 - Specify and scope hardware and system requirements
 - Identify and mitigate security threats and vulnerabilities that may arise from interactions with other systems, external and legacy code

- 3. Development and Implementation.....800
 - Develop and write software code
 - Perform unit testing and fix errors or bugs

- 4. Software Testing.....600
 - Work with development team to create test plans
 - Implement test cases
 - Find & fix bugs

- 5. Deployment and Maintenance.....200
 - Perform training for end users
 - Evaluate and fix bugs that may become apparent after product deployment

TOTAL HOURS 2000

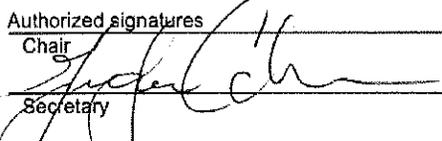
IX. RELATED/SUPPLEMENTAL INSTRUCTION

Minimum RSI hours per year defined per the following (See WAC 296-05-316(6)):

- 3. Project Manager.....210
- 4. Software Developer.....728
- 5. Web Developer.....328

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Authorized signatures Chair  Secretary Date: <u>6/6/16</u>	Approved by: Washington State Apprenticeship & Training Council Secretary of WSATC: Date:
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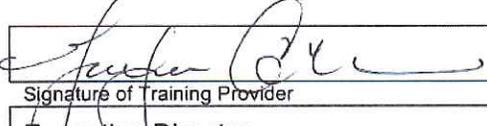
Apprenticeship Related/Supplemental Instruction (RSI) Plan Review

Program Sponsor: WTIA WIAC (Program 1982)		RECEIVED BY L&IAC: <i>6/6/16 OM</i>
Skilled Occupational Objective: Project Manager		
Term/OJT Hours: 2000	Total RSI Hours: 210	E-MAIL RECEIVED BY CENTRAL OFFICE: <i>6/6/16 KR</i>
Training Provider: WTIA Workforce Institute – Training Trust		

- By the signature placed below, the **program sponsor** agrees to provide the prescribed RSI for each registered apprentice and assures that:
 1. The RSI content and delivery method is and remains reasonably consistent with the latest occupational practices, improvements, and technical advances.
 2. The RSI is coordinated with the on-the-job work experience.
 3. The RSI is provided in safe and healthful work practices in compliance with WISHA and applicable federal and state regulations.

	Jennifer Carlson
Signature of Program Sponsor	Print Name

- By the signature placed below, the **training provider** assures that:
 1. The RSI will be conducted by instructors who meet the qualifications of "competent instructor" as described in WAC 296-05-003.
 - a. Has demonstrated a satisfactory employment performance in his/her occupation for a minimum of three years beyond the customary learning period for that occupation; and
 - b. Meets the State Board for Community and Technical Colleges requirements for a professional-technical instructor (see WAC 131-16-080 through -094), or be a subject matter expert, which is an individual, such as a journey worker, who is recognized within the industry as having expertise in a specific occupation; and
 - c. Has training in teaching techniques and adult learning styles, which may occur before or within one year after the apprenticeship instructor has started to provide the related technical instruction.
 2. If using alternative forms of instruction, such as correspondence, electronic media, or other self-study, such instruction is clearly defined.

	Jennifer Carlson
Signature of Training Provider	Print Name
Executive Director	WTIA Workforce Institute
Title	Organization

(If additional training providers, please provide information and signatures on next page.)

SBCTC Program Administrator has reviewed RSI plan and recommendations of the Trade Committee.

Signature of SBCTC Program Administrator	Print Name	Date

- SBCTC recommends approval
 SBCTC recommends return to sponsor

F100-519-000 RSI - Apprenticeship Related Supplemental Instruction (RSI) Plan Review Glossary of term
 F100-521-000 Apprenticeship Related Supplemental Instruction (RSI) Plan Review Criteria

Additional training provider (if necessary)

Signature of Training Provider	Print Name
Title	Organization

Additional training provider (if necessary)

Signature of Training Provider	Print Name
Title	Organization

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Signature of Training Provider	Print Name
Title	Organization

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Program	WTIA WIAC (Program 1982)
Sponsor:	
Skilled Occupational Objective:	Project Manager

NOTE: The description of each element must be in sufficient detail to provide adequate information for review by the SBCTC and review committee.

Describe minimum hours of study per year in terms of (check one):

- 12-month period from date of registration
 Defined 12-month school year
 2,000 hours of on-the-job training

Element/course: Project Management Foundations	Planned Hours: 40
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Develop a baseline understanding of the discipline and practice of project management • Identify the 5 project management process groups • Identify the 10 project management knowledge areas • Understand the role of key project management stakeholders, such as the project manager, the project team, the project sponsor, and a range of other stakeholders from within and outside one's organization • Identify the foundational parts of a project management plan • Draft a project management plan 	

Element/course: Project Risk & Quality Management	Planned Hours: 36
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Develop an understanding of risk identification best practices and methodologies • Perform qualitative and quantitative risk analysis • Develop appropriate risk response and monitoring strategies • Develop an understanding of quality assurance and quality control tools and techniques • Develop a quality management plan appropriate for technical projects 	

Element/course: Leading and Managing Technical Projects	Planned Hours: 24
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Evaluate and understand unique challenges of technical projects • Identify and apply leadership and management strategies in a technical environment • Work with technical and non-technical subject matter experts • Develop a personal leadership approach and strategy 	

Element/course: Planning and Scheduling Technical Projects (Agile Methodology)	Planned Hours: 30
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> Understand and address differences in scheduling techniques – critical path and agile methodologies Demonstrate an understanding of and preparedness to implement Agile/SCRUM techniques in an appropriate manner Demonstrate an understanding of the use of business analysis in technical projects 	

Element/course: Leading Remote Project Teams	Planned Hours: 24
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> Develop an understanding of the challenges and benefits associated with working in and leading a virtual project team Develop an understanding of key topics related to leading remote teams, such as team building and development, leadership styles, conflict resolution, building consensus, and fostering collaboration Analyze, select, and deploy appropriate technologies available for leading remote teams Create strategies to manage and lead in a culturally diverse context by fostering trust and respect Create strategies to overcome the technological and organizational challenges of leading remote projects 	

Element/course: Communication Skills for Project Managers	Planned Hours: 24
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> Demonstrate an understanding of the central role communication plays in the successful execution of a project Demonstrate an ability to determine an individual's communication style and establish techniques for effective communication and influence Demonstrate the ability to assess project communication needs and create an appropriate communication strategy tailored to specific projects Analyze project barriers such as technology, personality, and schedule pressures to develop procedures and policies, which effectively communicate with each stakeholder to meet his/her needs Develop an understanding of the various communication channels available and the ability to communicate clearly via the appropriate channel Demonstrate an ability to communicate technical information to a non-technical audience using written and oral communication channels Execute the various types of communications expected of a project manager—status reporting, project presentations, team meetings, and sponsor presentations 	

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Element/course: Review and CAPM® / PMP® Prep	Planned Hours: 32
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> Lab <input checked="" type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Project Integration Management: the processes and activities needed to identify, define, combine, unify, and coordinate the various processes and project management activities within the project management process groups. • Project Scope management: the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully. • Project Time Management: the processes required to manage the timely completion of the project. • Project Cost Management: the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget. • Project Quality Management: the processes and activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken. • Project Human Resource Management: the processes that organize, manage, and lead the project team. • Project Communications Management: the processes that are required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition of project information. • Project Risk Management: the processes of conducting risk management planning, identification, analysis, response planning, and controlling risk on a project. • Project Procurement Management: the processes necessary to purchase or acquire products, services, or results needed from outside the project team. Processes in this area include Procurement Planning, Solicitation Planning, Solicitation, Source Selection, Contract Administration, and Contract Closeout. • Project Stakeholders Management: the processes required to identify all people or organizations impacted by the project, analyzing stakeholder expectations and impact on the project, and developing appropriate management strategies for effectively engaging stakeholders in project decisions and execution. • Processes groups relevant for the CAPM® and PMP® Certification Exam • Initiating: processes performed to define a new project or a new phase of an existing project by obtaining authorization to start the project or phase. • Planning: Those processes required to establish the scope of the project, refine the objectives, and define the course of action required to attain the objectives that the project was undertaken to achieve. • Executing: Those processes performed to complete the work defined in the project management plan to satisfy the project specifications • Monitoring and Controlling: Those processes required to track, review, and regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes. • Closing: Those processes performed to finalize all activities across all process Groups to formally close the project or phase. • Overview of exam qualification standards and application process 	

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Apprenticeship Related/Supplemental Instruction (RSI) Plan Review

Program Sponsor: WTIA WIAC (Program 1982)		RECEIVED BY L&I AC: <i>6/6/16 OM</i>
Skilled Occupational Objective: Software Developer		E-MAIL RECEIVED BY CENTRAL OFFICE: <i>6/6/16 KR</i>
Term/OJT Hours: 2000	Total RSI Hours: 728	
Training Provider: WTIA Workforce Institute – Training Trust		

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Program	
Sponsor:	WTIA WIAC (Program 1982)
Skilled Occupational Objective:	Software Developer

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Describe minimum hours of study per year in terms of (check one):

- 12-month period from date of registration
- Defined 12-month school year
- 2,000 hours of on-the-job training

Element/course: Introduction to Computer Science & Web Development	Planned Hours: 30
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Data types – Strings, numbers and booleans • Data structures – Arrays and objects • Persistence – Local storage, session storage and JSON • Code structure – Code organization, common patterns and project scaffolding • Overview of web development – CRUD, HTTP, REST and request/response Cycle 	

Element/course: Introduction to Standard Development Practices and Tools	Planned Hours: 30
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Agile Software Development – User stories, pair programming, retrospectives and problem domains • IDE – Atom, chrome development tools, debugging, and linting code functionality and style • Git <ul style="list-style-type: none"> ○ Git vs. GitHub, git clone, git init, git status ○ Adding committing and pushing ○ Forking a repo, pull requests, git status and branches ○ Team workflow issues and organization 	

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Element/course: Web Development with HTML and CSS	Planned Hours: 60
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • HTML <ul style="list-style-type: none"> ○ Semantic HTML - <article>, <section>, <header>, <footer> ○ Structure ○ Classes ○ IDs ○ Attributes ○ Forms • CSS <ul style="list-style-type: none"> ○ Style – Typography, color, design and animations ○ Layout – Box model, grid, fluid/flex and responsive ○ Syntax – Selectors, how “cascading” works and pseudo-classes 	

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Element/course: Web Development with JavaScript	Planned Hours: 48
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Fundamentals – Variables, syntax, style, REPL, data types and data structures • Control Flow – “for” loops, “if” statements, “if...else” statements and “while” and “do while” • Functions – Declarations, expressions, parameters & arguments and function scope • Objects – Object oriented programming, properties, methods and constructors • Events – Listeners, handlers and types • The DOM 	

Element/course: MVC Design: Controllers	Planned Hours: 40
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Routing – URL design and Page.js <ul style="list-style-type: none"> ○ URL design ○ Page.js <ul style="list-style-type: none"> ▪ Push-state – History API, managing state and FSMs ▪ Middleware – Context and Next ▪ Route matching & placeholders • Rest <ul style="list-style-type: none"> ○ Noun: Resource representations – .json, .html, etc... ○ Verb: Method – GET, POST, PUT, etc... • External APIs • Modularity 	

Element/course: MVC Design: Views	Planned Hours: 40
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • DOM Manipulation <ul style="list-style-type: none"> ◦ Selectors – element/id/class, attribute and pseudo-selectors & filters ◦ jQuery methods – Chaining and getters & setters • DOM Events – Delegation, jQuery methods and browser interaction • Mobile-first development • Responsive design – Flexible media, breakpoints, viewport settings and percentage-based layouts • Templates – Abstraction with placeholders, regex, and libraries/ handlebars • Visual design – Color palettes, typography and icon fonts • SMACSS organization • States – JS hooks and new node 	

Element/course: MVC Design: Models	Planned Hours: 40
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Local data <ul style="list-style-type: none"> ◦ JSON – Validation, parse and stringify ◦ localStorage/ sessionStorage – getters and setters ◦ WebSQL <ul style="list-style-type: none"> ▪ Schema – CREATE TABLE and DROP TABLE ▪ CRUD – SELECT, INSERT, UPDATE, DELETE and clauses ▪ Joins & Relations – Normalization and foreign keys • Remote data <ul style="list-style-type: none"> ◦ AJAX – On-demand WRRRC, jQuery methods and callback management ◦ Web request-response cycle <ul style="list-style-type: none"> ▪ URL structure – Protocol, [Sub]Domain, Path, Anchor and Params ▪ Request object – URL, METHOD and HEADERS ▪ Response object – STATUS, HEADERS and BODY • Functional programming – Map/ reduce/ filter/ forEach, scope, closures and first-class functions 	

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Element/course: Advanced Agile Software Development & Development Best Practices	Planned Hours: 40
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Agile software development <ul style="list-style-type: none"> ○ User stories ○ Pair programming ○ Standup meetings ○ Retrospectives ○ Deployment process – Development vs production environment, environment variables, custom domains and Heroku ○ Git & GitHub <ul style="list-style-type: none"> ▪ Fork – Upstream sync and pull request ▪ Advanced collaboration – Issues, Gitflow (Pull requests, Branch and Merge) ▪ Organizations • Software best practices <ul style="list-style-type: none"> ○ Object oriented programming ○ Debugger/ Breakpoints ○ Industry perspectives ○ Dependency management ○ Styleguides and linters ○ JavaScript fundamentals 	

Element/course: Programming in Python and Software Testing	Planned Hours: 80
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Flow control <ul style="list-style-type: none"> ○ Conditionals ○ Iterators • Object-oriented programming <ul style="list-style-type: none"> ○ Classes & instances ○ Attributes & methods & properties ○ Inheritance & composition ○ Duck typing & special methods • Functional programming <ul style="list-style-type: none"> ○ Comprehensions ○ Generators ○ Lambdas ○ Decorators • REPLs & debugging • Python 2 & Python 3 compatibility <ul style="list-style-type: none"> ○ Conditional imports ○ Futures library ○ Unicode handling • VirtualEnv & environment management • Software Testing <ul style="list-style-type: none"> ○ Types – Unit, functional, integration, performance, acceptance and regression ○ Tools – Pytest & Python unittest, factories & fixtures and mocks & stubs ○ TDD – Outside-in refactors and tests as design tool <div style="text-align: right; margin-top: 20px;"> <p>RECEIVED BY L&I AC: <u>6/6/16 AM</u></p> <p>E-MAIL RECEIVED BY CENTRAL OFFICE: <u>6/6/16 KK</u></p> </div>	

Element/course: Django Web Framework and SQL & Data Modeling	Planned Hours: 160
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Django Web Framework <ul style="list-style-type: none"> ○ MVT <ul style="list-style-type: none"> ▪ Performance ▪ Form media ▪ Static handling ▪ File uploads ▪ Jinja2 & DTL ○ REST <ul style="list-style-type: none"> ▪ Routing ▪ APIs <ul style="list-style-type: none"> • JSON • Hypermedia ▪ Nested resources & namespaces ○ Conventions & best practices <ul style="list-style-type: none"> ▪ Time zones ▪ Security & defaults ○ User management <ul style="list-style-type: none"> ▪ Authorization ▪ Authentication ○ ORM <ul style="list-style-type: none"> ▪ Relational schemas <ul style="list-style-type: none"> • Migrations • Relationships & normalization • Foreign keys • Indexes ▪ Associations <ul style="list-style-type: none"> • Dependencies • Prefetch related & select_related ▪ Validations & signals ○ CLI <ul style="list-style-type: none"> ▪ Django console & DB shell ▪ Skeleton generators ▪ Django management commands ○ Django Mail • SQL & Data Modeling <ul style="list-style-type: none"> ○ Select <ul style="list-style-type: none"> ▪ Group ▪ Order ▪ Limit ○ Insert & update ○ Transactions ○ Joins ○ Performance <ul style="list-style-type: none"> ▪ Slow query logs ▪ Query plans ▪ N+1 avoidance 	

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Element/course: Web Application Development with Pyramid	Planned Hours: 80
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Pyramid Web Framework <ul style="list-style-type: none"> ○ Routes ○ Views <ul style="list-style-type: none"> ▪ View config ▪ Predicates ○ Renderers <ul style="list-style-type: none"> ▪ Templating ▪ JSON renderers ○ App configuration ○ SQLAlchemy ORM ○ Authentication & authorization <ul style="list-style-type: none"> ▪ Encryption ▪ ACLs ▪ Per-object security • WWW <ul style="list-style-type: none"> ○ HTTP <ul style="list-style-type: none"> ▪ Request <ul style="list-style-type: none"> • Methods • State <ul style="list-style-type: none"> ○ Params ○ Cookies • Scheme ▪ Response <ul style="list-style-type: none"> • Status codes • Media types ○ JavaScript <ul style="list-style-type: none"> ▪ AJAX ▪ CORS & CSRF 	

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Element/course: Understanding and Using Application Development Tools	Planned Hours: 20
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Git <ul style="list-style-type: none"> ○ Version control systems – Distributed VCS, Branch, Merge and Diff ○ Github – Gitflow, Fork and Pull requests ○ Config – Remotes and Default behaviors • IDE/Text editor <ul style="list-style-type: none"> ○ Syntax highlighting & linting ○ Discoverable shortcuts ○ Scope awareness ○ Extensibility ○ Power editing – Multiline edits, pasteboard history and rapid file switching ○ Symbol autocomplete • Operating system <ul style="list-style-type: none"> ○ File management ○ Admin permissions ○ Package management ○ Local web server ○ Task supervision • Command line <ul style="list-style-type: none"> ○ Navigation ○ Secure connections & private keys ○ File content control • PIP & setuptools <ul style="list-style-type: none"> ○ Eggs & Wheels <ul style="list-style-type: none"> ▪ File structure & package metadata ▪ Open-source etiquette ○ Dependency management – Testing & extras 	
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Element/course: Data Structures & Algorithms	Planned Hours: 40
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Linear data structures – Linked lists, Stack, Queue • Tree data structures – Binary heap, priority queue, binary search tree and trie trees • Graphs – Directed, undirected, weighted and Shortest path algos • Sorting algorithms – Merge, Insertion, Quicksort and Radix • Machine learning & data science algorithms <ul style="list-style-type: none"> ○ Unsupervised learning – k-means ○ Supervised learning <ul style="list-style-type: none"> ▪ k-nearest neighbor ▪ Linear regressions ○ Pandas ○ Numpy ○ Matplotlib 	

Element/course: Professional Software Engineering and Deployment	Planned Hours: 20
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Software engineering <ul style="list-style-type: none"> ○ Application architecture <ul style="list-style-type: none"> ▪ Modularization & Resource Oriented Architecture ▪ Encapsulation of domain logic ○ Agile process <ul style="list-style-type: none"> ▪ Project ownership & user stories ▪ Iterative cycles <ul style="list-style-type: none"> • Testing & pairing • CI & code review • QA & debugging ▪ High-bandwidth communication ○ Project management <ul style="list-style-type: none"> ▪ Planning & estimating ▪ Tools & documentation ▪ Licensing • Deployment <ul style="list-style-type: none"> ○ Automation <ul style="list-style-type: none"> ▪ Continuous Integration ▪ Server monitoring & logging ○ Configuration management ○ Release management ○ Security & data integrity ○ Platform <ul style="list-style-type: none"> ▪ Dedicated ▪ Virtualized ▪ Abstracted 	

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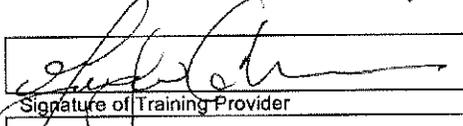
Apprenticeship Related/Supplemental Instruction (RSI) Plan Review

Program Sponsor: WTIA WIAC (Program 1982)		RECEIVED BY L&I AC: <i>6/6/16 OM</i>
Skilled Occupational Objective: Web Developer		
Term/OJT Hours: 2000	Total RSI Hours: 328	E-MAIL RECEIVED BY CENTRAL OFFICE: <i>6/6/16 KR</i>
Training Provider: WTIA Workforce Institute – Training Trust		

- By the signature placed below, the **program sponsor** agrees to provide the prescribed RSI for each registered apprentice and assures that:
 1. The RSI content and delivery method is and remains reasonably consistent with the latest occupational practices, improvements, and technical advances.
 2. The RSI is coordinated with the on-the-job work experience.
 3. The RSI is provided in safe and healthful work practices in compliance with WISHA and applicable federal and state regulations.

	Jennifer Carlson
Signature of Program Sponsor	Print Name

- By the signature placed below, the **training provider** assures that:
 1. The RSI will be conducted by instructors who meet the qualifications of "competent instructor" as described in WAC 296-05-003.
 - a. Has demonstrated a satisfactory employment performance in his/her occupation for a minimum of three years beyond the customary learning period for that occupation; and
 - b. Meets the State Board for Community and Technical Colleges requirements for a professional-technical instructor (see WAC 131-16-080 through -094), or be a subject matter expert, which is an individual, such as a journey worker, who is recognized within the industry as having expertise in a specific occupation; and
 - c. Has training in teaching techniques and adult learning styles, which may occur before or within one year after the apprenticeship instructor has started to provide the related technical instruction.
 2. If using alternative forms of instruction, such as correspondence, electronic media, or other self-study, such instruction is clearly defined.

	Jennifer Carlson
Signature of Training Provider	Print Name
Executive Director	WTIA Workforce Institute
Title	Organization

(If additional training providers, please provide information and signatures on next page.)

SBCTC Program Administrator has reviewed RSI plan and recommendations of the Trade Committee.

Signature of SBCTC Program Administrator	Print Name	Date

SBCTC recommends approval SBCTC recommends return to sponsor

F100-519-000 RSI - Apprenticeship Related Supplemental Instruction (RSI) Plan Review Glossary of term

F100-521-000 Apprenticeship Related Supplemental Instruction (RSI) Plan Review Criteria

Additional training provider (if necessary)

Signature of Training Provider	Print Name
Title	Organization

Additional training provider (if necessary)

Signature of Training Provider	Print Name
Title	Organization

Additional training provider (if necessary)

Signature of Training Provider	Print Name
Title	Organization

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Program	
Sponsor:	WTIA WIAC (Program 1982)
Skilled Occupational Objective:	Web Developer

NOTE: The description of each element must be in sufficient detail to provide adequate information for review by the SBCTC and review committee.

Describe minimum hours of study per year in terms of (check one):

- 12-month period from date of registration
- Defined 12-month school year
- 2,000 hours of on-the-job training

Element/course: Introduction to Computer Science & Web Development	Planned Hours: 30
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Data types – Strings, numbers and booleans • Data structures – Arrays and objects • Persistence – Local storage, session storage and JSON • Code structure – Code organization, common patterns and project scaffolding • Overview of web development – CRUD, HTTP, REST and request/response Cycle 	

Element/course: Introduction to Standard Development Practices and Tools	Planned Hours: 30
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Agile Software Development – User stories, pair programming, retrospectives and problem domains • IDE – Atom, chrome development tools, debugging, and linting code functionality and style • Git <ul style="list-style-type: none"> ○ Git vs. GitHub, git clone, git init, git status ○ Adding, committing and pushing ○ Forking a repo, pull requests, git status and branches ○ Team workflow issues and organization 	

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Element/course: Web Development with HTML and CSS	Planned Hours: 60
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • HTML <ul style="list-style-type: none"> ○ Semantic HTML - <article>, <section>, <header>, <footer> ○ Structure ○ Classes ○ IDs ○ Attributes ○ Forms • CSS <ul style="list-style-type: none"> ○ Style – Typography, color, design and animations ○ Layout – Box model, grid, fluid/flex and responsive ○ Syntax – Selectors, how “cascading” works and pseudo-classes 	

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Element/course: Web Development with JavaScript	Planned Hours: 48
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Fundamentals – Variables, syntax, style, REPL, data types and data structures • Control Flow – “for” loops, “if” statements, “if...else” statements and “while” and “do while” • Functions – Declarations, expressions, parameters & arguments and function scope • Objects – Object oriented programming, properties, methods and constructors • Events – Listeners, handlers and types • The DOM 	

Element/course: MVC Design: Controllers	Planned Hours: 40
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Routing – URL design and Page.js <ul style="list-style-type: none"> ○ URL design ○ Page.js <ul style="list-style-type: none"> ▪ Push-state – History API, managing state and FSMs ▪ Middleware – Context and Next ▪ Route matching & placeholders • Rest <ul style="list-style-type: none"> ○ Noun: Resource representations – .json, .html, etc... ○ Verb: Method – GET, POST, PUT, etc... • External APIs • Modularity 	

Element/course: MVC Design: Views	Planned Hours: 40
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • DOM Manipulation <ul style="list-style-type: none"> ◦ Selectors – element/id/class, attribute and pseudo-selectors & filters ◦ jQuery methods – Chaining and getters & setters • DOM Events – Delegation, jQuery methods and browser interaction • Mobile-first development • Responsive design – Flexible media, breakpoints, viewport settings and percentage-based layouts • Templates – Abstraction with placeholders, regex, and libraries/ handlebars • Visual design – Color palettes, typography and icon fonts • SMACSS organization • States – JS hooks and new node 	

Element/course: MVC Design: Models	Planned Hours: 40
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Local data <ul style="list-style-type: none"> ◦ JSON – Validation, parse and stringify ◦ localStorage/ sessionStorage – getters and setters ◦ WebSQL <ul style="list-style-type: none"> ▪ Schema – CREATE TABLE and DROP TABLE ▪ CRUD – SELECT, INSERT, UPDATE, DELETE and clauses ▪ Joins & Relations – Normalization and foreign keys • Remote data <ul style="list-style-type: none"> ◦ AJAX – On-demand WRRRC, jQuery methods and callback management ◦ Web request-response cycle <ul style="list-style-type: none"> ▪ URL structure – Protocol, [Sub]Domain, Path, Anchor and Params ▪ Request object – URL, METHOD and HEADERS ▪ Response object – STATUS, HEADERS and BODY • Functional programming – Map/ -reduce/ -filter/ -forEach, scope, closures and first-class functions 	

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Element/course: Advanced Agile Software Development & Development Best Practices	Planned Hours: 40
Mode of Instruction (please check all that apply): <input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> Lab <input type="checkbox"/> On-line <input type="checkbox"/> Self-study Provided by: WTIA WIAC	
Description of element/course: <ul style="list-style-type: none"> • Agile software development <ul style="list-style-type: none"> ○ User stories ○ Pair programming ○ Standup meetings ○ Retrospectives ○ Deployment process – Development vs production environment, environment variables, custom domains and Heroku ○ Git & GitHub <ul style="list-style-type: none"> ▪ Fork – Upstream sync and pull request ▪ Advanced collaboration – Issues, Gitflow (Pull requests, Branch and Merge) ▪ Organizations • Software best practices <ul style="list-style-type: none"> ○ Object oriented programming ○ Debugger/ Breakpoints ○ Industry perspectives ○ Dependency management ○ Styleguides and linters ○ JavaScript fundamentals 	

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Department of Labor & Industries
 Apprenticeship Section
 PO Box 44530
 Olympia WA 98504-4530



Journey Level Wage Rate

From which apprentices' wages rates are computed

TO: Washington State Apprenticeship & Training Council

From WTIA WIAC (Program 1982)

(NAME OF STANDARDS)

Occupations	County(s)	Journey Level Wage Rate	Effective Date:
Software Developer	All Geographic Regions Covered by WTIA WIAC Standards of Apprenticeship	75,000 Annually	July 21, 2016
Web Developer	All geographic regions covered by WTIA WIAC Standards of Apprenticeship	65,000 Annually	July 21, 2016
Project Manager	All geographic regions covered by WTIA WIAC Standards of Apprenticeship	65,000 Annually	July 21, 2016

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