# ADVISOR SERVICES PORTAL

**README** 

This document is meant to provide a brief, informal overview of how the EvCC Advisor Services Portal functions and is structured.

Advisor Services Portal v1.1

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# 2 DOCUMENT VERSION HISTORY

# 2.1 OCTOBER 2, 2016

Initial document draft

# 2.2 OCTOBER 6, 2016

- Manage Users and Edit User: Corrected location of search functionality description.
- Getting Started: Added clarification regarding JDBC data sources
- Finalized document formatting

# 2.3 MARCH 17, 2017

- Updated date on GPL to reflect work performed during winter quarter
- Added Development Principles section
- Updated Getting Started section to reflect transition from Lucee to ColdFusion2016 for prototype website
- Updated Installation section with procedural corrections found during ColdFusion2016 migration
- Updated Website Structure and Links section to reflect new and updated UI elements

# 3 Introduction

The Advisor Services Portal is a website built for Everett Community College to allow faculty and students to work together and quickly evaluate potential college degrees offered by Washington State universities, by creating degree plans and identifying courses to take. This document is meant to provide a brief, informal overview of how the Advisor Services Portal functions and is structured, but is only a supplement to formal ColdFusion knowledge and in-line comments supplied within the website CFM code.

# 4 DEVELOPMENT PRINCIPLES

The original goal of this project was to answer the question, "How can we make academic advisors and students more efficient at determining degree paths and educational goals?" The prototype Advisor Services Portal website was the first phase of the answer to that question. Developers continuing this project should consider the following principles:

#### Have clear goals

Don't create one monolithic application that tries to do everything. Instead, build something that has a clear purpose, is effective and efficient, and satisfies your users. This may mean starting multiple independent projects if several goals exist with different scopes.

Identifying clear goals for the project upfront helps keep the project on track. This makes the decision making process easier regarding what should or should not be included as part of the product and helps define whether a feature is successful once it's in. Keep the scope of the product narrow enough so it is manageable and developers can focus on deep features rather than a random collection of half-baked ones.

To learn more, see: https://www.usability.gov/how-to-and-tools/methods/kick-off-meeting.html

#### Be better than today

For student advising, other electronic tools already exist to aid faculty in this process, but often a pen, paper, and worksheet is easier and faster to use. Not taking users into account with design means both faculty and students are likely to abandon this system in favor of something else that's faster and easier. Advisors already live in a world where they have to go between pen and paper, worksheets, and computer interfaces. Adding one more thing to the pile of tools doesn't improve the current situation.

In addition, users will shy away from the new system if it doesn't fit into existing workflows. Changing existing user habits is really hard. Users are only willing to change their behavior if the value they gain by changing is high. When developing features for this project, the system will need to demonstrate this value quickly and consistently to keep the user motivated.

To learn more, see: https://www.usability.gov/how-to-and-tools/methods/task-analysis.html

# Know your target user

User research is the collection of insights about potential users, their problems, their environment, their processes, etc. The goal is to educate everyone working on the project about the user and what they need from a product or service. Without user research, we can only make assumptions about how the project will benefit users and how receptive users will be with the final product.

To learn more, see: https://www.usability.gov/what-and-why/user-research.html

# Remember that you are not the user

Usability testing evaluates how well a product meets the needs of the users. This usually involves asking a set of potential or current users to complete a set of tasks, using a prototype or a final product, and observing their actions. As a developer or someone who is closely associated to this project, please keep this in mind: you are not the person this product is being designed for. To you, the product may look functional and finished--having justified a bad user experience because it is convenient for the underlying technology, but the real judges of success are the users who will be using your product on a daily basis.

Test early, test often, and don't compromise usability to satisfy technological goals.

To learn more, see: https://www.usability.gov/what-and-why/usability-evaluation.html

# **5** GETTING STARTED

If you have not done so already, read the document titled "Interview Analysis" which explains the scope and motivations behind decisions that shaped this website. You're encouraged to explore the Virtual Advisor folder which contains documentation, database content, research data, and early prototype sketches. If you don't have access to this folder, please request it.

This website is built using ColdFusion (2016 release) by request of Everett Community College to allow for easier integration into their existing infrastructure. ColdFusion is a web application platform and markup language that employs custom tags closely resembling HTML, while its script syntax resembles JavaScript. Unlike HTML or JavaScript, ColdFusion code is not exposed to clients in any way. For every HTTP page request, ColdFusion tags are interpreted and processed by the ColdFusion server before being rendered in HTML and sent to the primary webserver that the user is accessing. Application logic is exclusively server-side through markup tags or cfscript. Get familiar with the basics of ColdFusion through these resources:

- ColdFusion 9 Essential Trailing by David Gassner: <a href="https://www.lynda.com/ColdFusion-9-tutorials/essential-training/54844-2.html">https://www.lynda.com/ColdFusion-9-tutorials/essential-training/54844-2.html</a> (you'll need a Lynda.com account, which you can get for free by having a King or Snohomish County library card)
- Learn CF In a Week: <a href="http://www.learncfinaweek.com/">http://www.learncfinaweek.com/</a> (really good written documentation and examples, by topic)

The Advisor Services Portal and ColdFusion Markup Language (also known as CFM or CFML) is actively supported by two app engines: Adobe ColdFusion and Lucee. The Everett Community College infrastructure uses Adobe's ColdFusion server while the Advisor Services Portal prototype website formerly used the open source Lucee server. Lucee is a fork of the Railo CFML engine (railo is no longer supported) and handles most (but not all) Adobe ColdFusion CFML tags. Documentation for Lucee is extremely limited, so use Railo documentation as needed when dealing with server configuration issues. Adobe ColdFusion documentation is excellent and is your best source for reference documentation during development.

The Advisor Services Portal public prototype website has been ported to ColdFusion 2016 which more closely matches the anticipated deployment environment, however local development on Lucee may be useful again in the future and this information has not been removed from this document. The public prototype can be accessed here: <a href="http://www.virtual-advisor.com/">http://www.virtual-advisor.com/</a>

First time users may register a new student account, or existing student and faculty users can log into the system through the home page. Two demonstration accounts exist which may be used:

- student@email.com
- advisor@email.com

Those accounts are named to represent the access levels they have. The common password for all of them is 'password'.

The Adviser Services Portal uses MS SQL as a storage medium for website content. By design, access to dynamic content (CRUD operations) is carefully controlled through ColdFusion application logic. As appropriate, some aspects of the database are controlled through SQL triggers. See the document titled "Database Relational Model" for more details.

Connection to SQL databases is handled as an internal function through ColdFusion Server, where an external JDBC type data source was previously configured during initial server setup. Connecting the data source to the Advisor Services Portal web application is handled in the root Application.cfc file.

A word of warning: The Advisor Services Portal makes heavy use of ColdFusion functionality which may not be easy to replicate in other languages. As a new developer to this project, if your intention is to port this website to another platform, significant time should be spent evaluating the benefits of abandoning ColdFusion as doing so is non-trivial.

# 6 Installation

There is no automated way of installing the Advisor Services Portal. Configuring your copy of ColdFusion Server or Lucee is beyond the scope of this document and may require special skills or assistance; however, the motivated administrator may want to consider these general steps:

- 1. Install and configure ColdFusion Server or Lucee as either a hardened production server or as a debug friendly development server.
- 2. Gain access to a MS SQL server and create a new database named AdvisorPortal.
- 3. Connect ColdFusion to the database as a data source, as described in the document titled "Connect SQL to ColdFusion" as special steps are necessary.
- 4. Connect to the database and execute the T-SQL code from the schema.sql file found in the database folder of the website source files to build the database schema.
- 5. If importing data, populate tables in the same order as tables listed in the "Database Relational Model" document to allow foreign key constraints to be maintained.
  - Note: rows in COLLEGE\_NOTES and DEGREE\_NOTES may need to be manually cleared prior to importing
    data to those tables as they are populated automatically by external triggers and may contain
    overlapping primary keys.
- 6. Install the website files to your webserver. As necessary, update the root Application.cfc file describing the web application (this.name) and datasource (this.datasource) to use.
- 7. Use the "First Time User?" form to create a student account as the first account. Before logging into the website, directly access the database and remove the new record created in STUDENTS and instead create one in FACULTY with the administrator bit enabled.
- 8. As an administrator, configure the Advisor Services Portal as desired through the website.

Note: ColdFusionBuilder2016 may be installed in place of ColdFusion Server or Lucee if acting only as a development server. The 60 day trial expires with no significant consequence.

# 7 Website Design Considerations and Notes

The Advisor Services Portal is designed to be a ColdFusion application that can run in any location on a ColdFusion web server without using custom server mappings. Since ColdFusion does not cleanly distinguish application logic from view, this is manually performed by placing as much application logic in index.cfm files which reside in subdirectories, which are associated with a model/pageName.cfm file containing primarily HTML, where pageName is named to represent the page being presented.

A special file, Application.cfc, when found in a directory, is parsed before any other ColdFusion code is run. Currently the only Application.cfc in use is at the application root folder. It contains global site settings as well as the onRequest directive. In this directive, for any page request, ColdFusion evaluates if the client is logged in. If not, the login page is sent to the user prior to completing the normal page request. In addition to the login forcing function, this Application.cfc is wholly responsible for creating session variables relating to the current user session. As they are part of the same page, the Application.cfc also validates and controls the creation of new student accounts.

The Advisor Services Portal application logic is designed to work as a state machine, changing behavior as the user transitions from one navigation state to the next. There are two inherent difficulties with this. First, website navigation is not necessarily linear. Second, HTTP is a stateless protocol by default, where ColdFusion imposes the following exceptions:

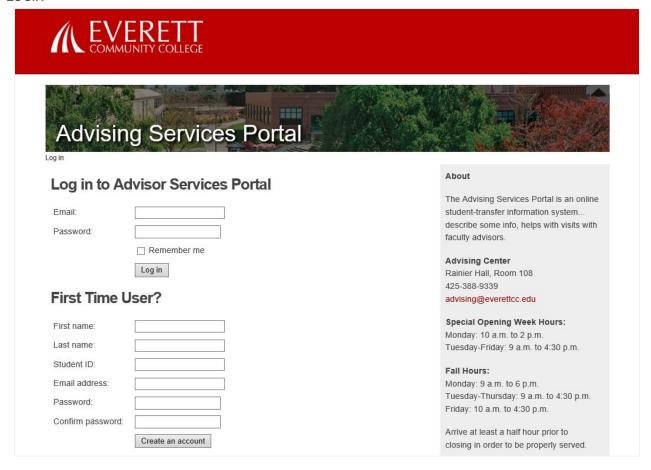
- ColdFusion forms post onto themselves when a submit button is pressed and carry over form inputs as part of
  the form variable scope. This scope is active on the next immediate page load and allows other page logic to
  run, reading form variables saved in server memory.
- A webpage can carry state to another webpage through URL variables. Caution must be used as URL variables are exposed to the client and subject to modification.
- The session is stored in the server memory and is global for the client's current web browser. Session state must be manually set and cleared through code logic. Session state is set to expire after 30 minutes of inactivity.

A design characteristic built into all pages for the Advisor Services Portal is that anchor tags are only used to visit other areas within the website where no additional behavior is expected. On the other hand, form buttons are used when an action is to take place, which may result in the user being redirected at the conclusion of that action.

Each webpage makes use of cfmodules to inject a common header and footer on each page. The application root is determined in the header and all page styling is relative to that computed path. This was necessary to ensure that CSS rendered consistently on both ColdFusion Server and Lucee, in both a logged in and logged out state, where the user's page request was intercepted at a webpage other than the root index.cfm and the login page was enforced.

# 8 Website Structure and Links

# 8.1 LOGIN



Login a user by evaluating a supplied email address and password against the database. A password and salt are evaluated by using SHA-512 hashing. A deactivated user account is prevented from logging in. This page also allows for the creation of new student accounts where email address and student ID number must be unique in the Advisor Services Portal.

Users are identified as either students or faculty. If faculty, the user is logged in as an advisor, editor, or administrator.

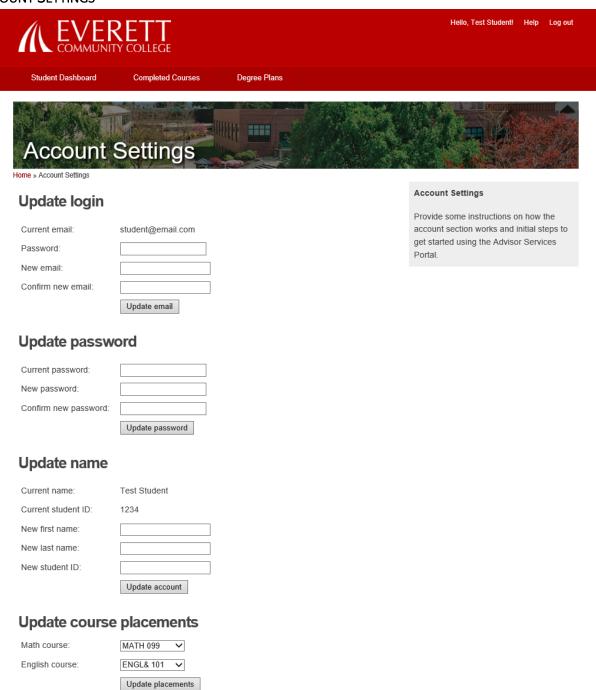
#### Roles:

- Student: basic access to student pages (student dashboard, completed courses, degree plans), college details, degree details, and course details.
- Advisor: basic faculty access with no ability to modify parameters of the website. Advising a student will grant
  all access to student pages, on behalf of that student.
- Editor: inherits rights of the advisor role, and adds the ability to modify the college, degree, course, and department site settings. Caution must be taken when granting this role.
- Administrator: inherits rights of the editor role, and adds the ability to enable/disable colleges, degrees, courses, and departments. Administrators have full control over other user accounts.

#### Known issues:

- The "Remember me" checkbox is non-functional.
- There is currently no way for a user to reset their own password if it is forgotten.
- Student ID numbers must be captured as integers only. Use of spacing or hyphens for visual formatting is a desired feature.

# 8.2 ACCOUNT SETTINGS



Update personal information associated with a logged-in user. Valid for all user roles.

#### 8.3 HELP

Display help documentation for the Advisor Services Portal.

#### Known issue:

• There is currently no documentation written.

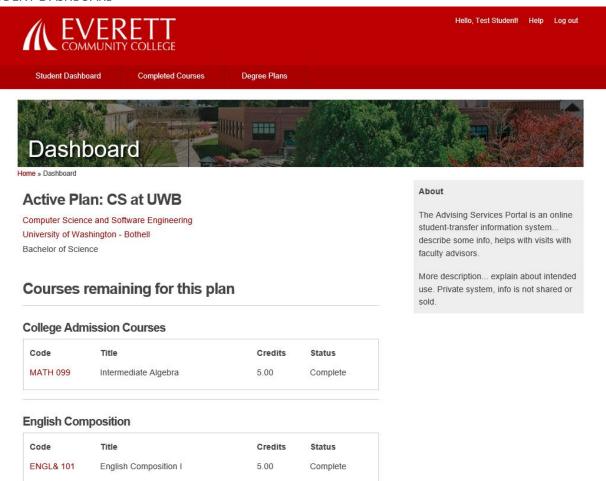
#### 8.4 Log out

Logs the user out of the Advisor Services Portal and clears the user session.

#### 8.5 INDEX

Displays the homepage for a selected role. If no role is found for the user session, the user is logged out.

# 8.6 STUDENT DASHBOARD

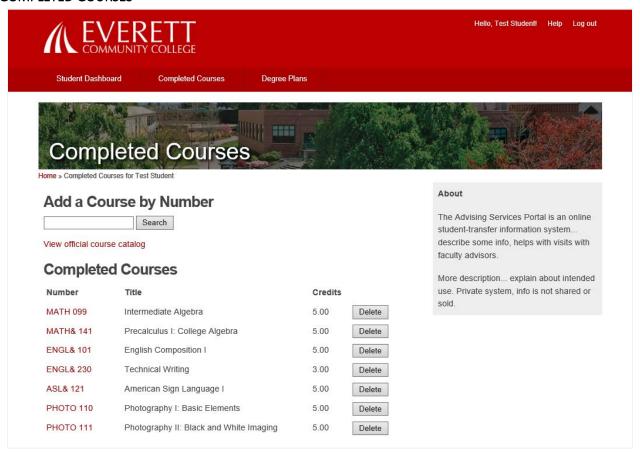


Displays UI for the student to enter in placement courses for Math and English until both are set. Then, displays getting started instructions if no degree plan exists. Otherwise, displays details pertaining to the active degree plan. This page is only available as a student view but is accessible to faculty when operating on behalf of a student through advising.

#### Known issues:

- Schedule planner UI is not yet implemented
- Does not show diversity requirement in plan
- Does not show course credits remaining by category if defined

# 8.7 COMPLETED COURSES



Allows students to record Everett Community College courses on their transcript. Courses are added by course number (e.g., ENGL& 101) and can be searched by partial names. Variable credit courses prompt the user to supply the number of credits taken. Courses with prerequisites listed require the user to self-certify that the prerequisites were met. This page is only available as a student view but is accessible to faculty when operating on behalf of a student through advising.

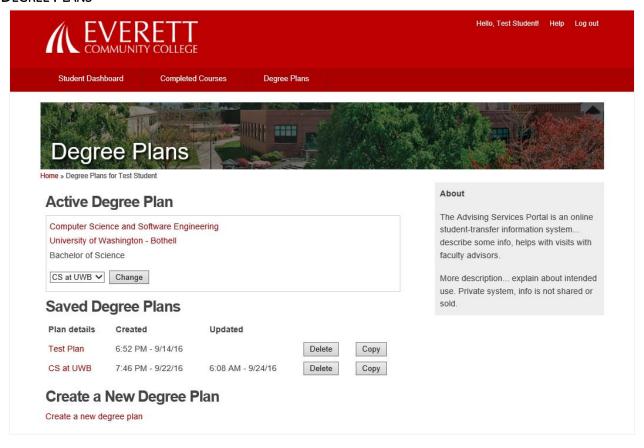
#### Known issues:

• Prerequisite checking is currently not performed automatically. If courses are added in sequence, the website will not detect that prerequisites were already met by evaluating the existing list of completed courses.

# Database notes:

 Courses added or removed for a student's completed courses directly applies to course rankings in the COURSE\_RANKINGS table.

# 8.8 DEGREE PLANS



Allows students to manage existing degree plans. If more than one saved degree plan exists, users may change the active degree plan. The user is able to delete saved degree plans if they are not currently marked as the active plan. This page is only available as a student view but is accessible to faculty when operating on behalf of a student through advising.

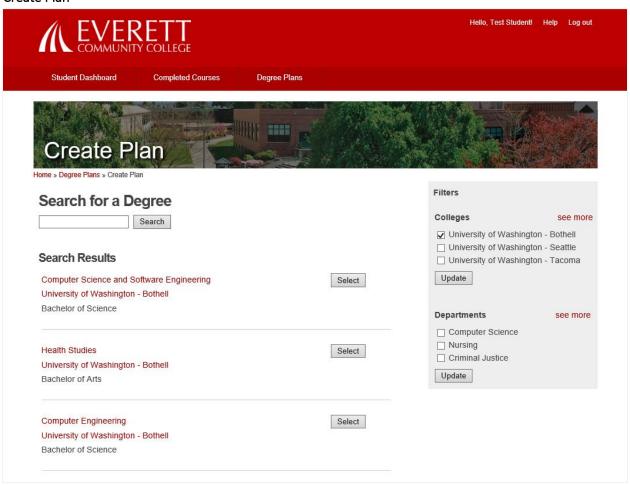
#### Known issues:

- Time stamps are server time, not local time.
- The copy button is non-functional.

#### Database notes:

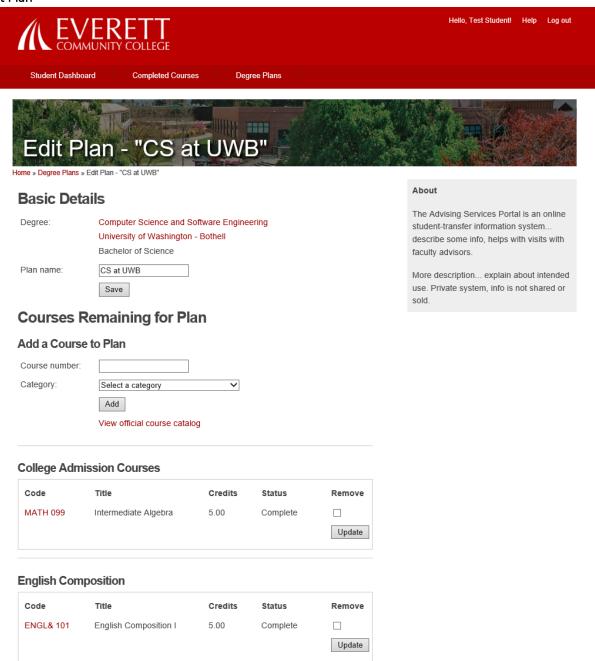
• Changing the active plan directly applies to college, degree, and department rankings in the COLLEGES\_RANKINGS, DEGREE\_RANKINGS, and DEPARTMENT\_RANKINGS tables.

#### 8.8.1 Create Plan



Allows students to create a new degree plan through filters and search. Searching will display all active degrees by partial name match, ordered by degree ranking. By default, the top six filters are displayed for colleges and departments, ordered by college ranking and department ranking respectively. The full college filter and department filter listings are available with the "see more" link. Applying a filter will automatically display results matching that filter. Selected filters are displayed first in the filter list before the top rankings are displayed. Any combination of college, department, or degree search can be applied to narrow down search results. Selecting a degree will automatically create a new degree plan and redirect to the edit plan page. New plans automatically receive the name of the degree by default. This page is only available as a student view but is accessible to faculty when operating on behalf of a student through advising.

#### 8.8.2 Edit Plan



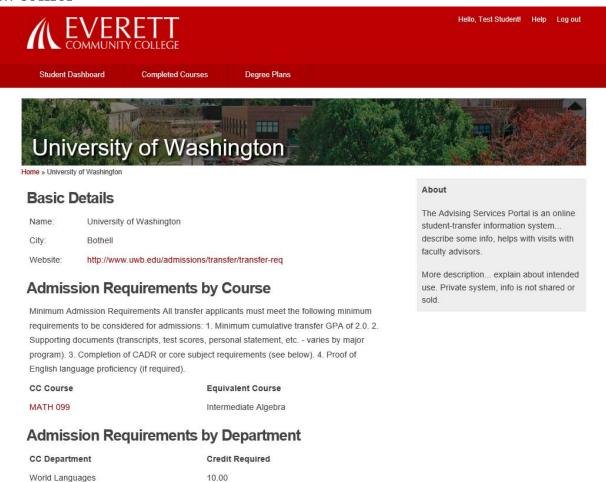
Displays degree information and Everett Community College courses associated with a plan. Courses specified as a college admission requirement, degree admission requirement, or optional graduation requirement are prepopulated in predefined degree categories. Course status is changed from a blank field or "optional" when a matching course is found on the Completed Courses page. Optional graduation courses are tagged with the "optional" status as they are not required to transfer to a four-year university. The tag differentiates them from college or degree admission requirements.

Variable credit courses are not mapped to completed courses until the planned number of credits to be taken is set. Additional courses can be added, by category, to the plan. This page is only available as a student view but is accessible to faculty when operating on behalf of a student through advising.

#### Known issues:

- Repeated courses may cause erroneous results with matching planned courses to completed courses.
- No recommendation engine exists to automatically backtrack additional courses necessary to qualify for the defined required courses to meet university admission requirements.

#### 8.9 VIEW COLLEGE



Displays information relating to a college defined in the Advisor Services Portal. Notes, and admission requirements by course, department, or discipline are displayed, if they exist. This page is only available as a student view but is accessible to faculty when operating on behalf of a student through advising.

#### 8.10 VIEW DEGREE





Home » Computer Science and Software Engineering

#### **Basic Details**

College: University of Washington - Bothell

Degree: Computer Science and Software Engineering

Department: Computer Science

Type: Bachelor of Science

Create new plan with degree

#### About

The Advising Services Portal is an online student-transfer information system... describe some info, helps with visits with faculty advisors.

More description... explain about intended use. Private system, info is not shared or sold.

# Admission Requirements by Course

The table below lists the prerequisite courses and other requirements for the Computer Science and Software Engineering (CSSE) majors offered by the CSS Division. Because the UW course equivalency guides are given using UW Seattle course numbers, those are provided in the second column. All of the above requirements for the major you are applying to must be completed prior to applying to the major. The exception is Statistics which is the ONLY soft prerequisite; this means that course can be in progress or completed after being admitted to the major. Please note that both Programming I and II must be taken in the same programming language. There is no requirement as to which programming language is used as long as the two courses are taught using the same programming language.

CC Course	Category	Equivalent Cour	
ENGL& 101	English Composition	ENGL 131	
ENGL& 230	Advanced Composition	HCDE 231	
MATH& 151	Mathematics	MATH 124	
MATH& 152	Mathematics	MATH 125	

Displays information relating to a degree defined in the Advisor Services Portal. Notes, admission, and graduation requirements are displayed, if they exist. Users have the ability to create a new degree plan from this page. This page is only available as a student view but is accessible to faculty when operating on behalf of a student through advising.

#### 8.11 VIEW DEPARTMENT

Displays information relating to a department defined in the Advisor Services Portal. This page is only available as a student view but is accessible to faculty when operating on behalf of a student through advising.

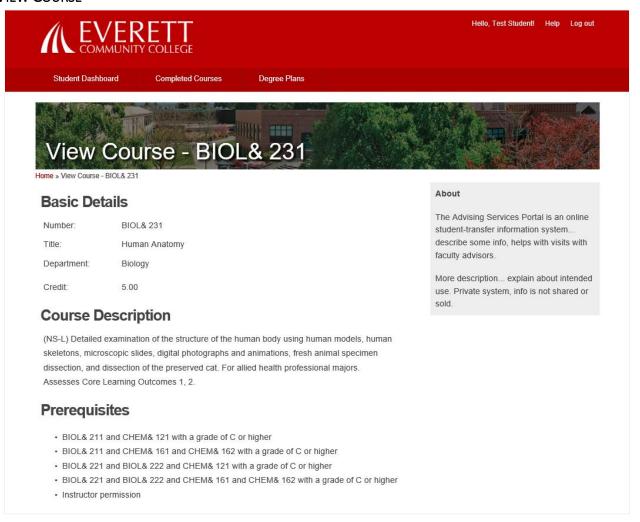
#### Known issues:

- This page is not coded and only exists as a placeholder.
- This page is not hooked up to any external links.

#### Database notes:

This data is inherited through database dumps provided by Everett Community College

# 8.12 VIEW COURSE

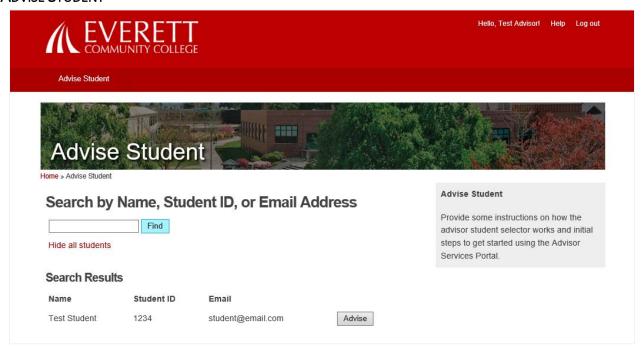


Displays information relating to a course defined in the Advisor Services Portal. Placement scores, instructor enrollment authorization, and other course prerequisites are displayed, if they exist. This page is only available as a student view but is accessible to faculty when operating on behalf of a student through advising.

#### Database notes:

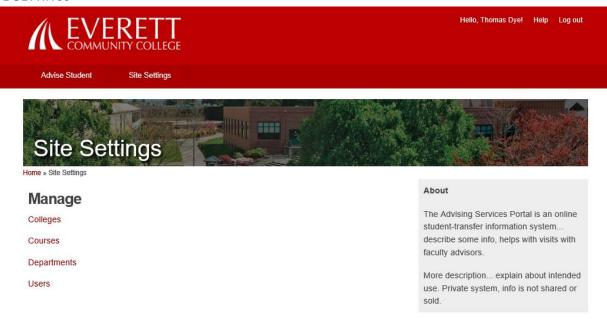
- This data is inherited through database dumps provided by Everett Community College.
- All placement scores, instructor enrollment authorizations, and course prerequisites are captured in other tables. See the document titled "Database Relational Model" for more details.

# 8.13 Advise Student



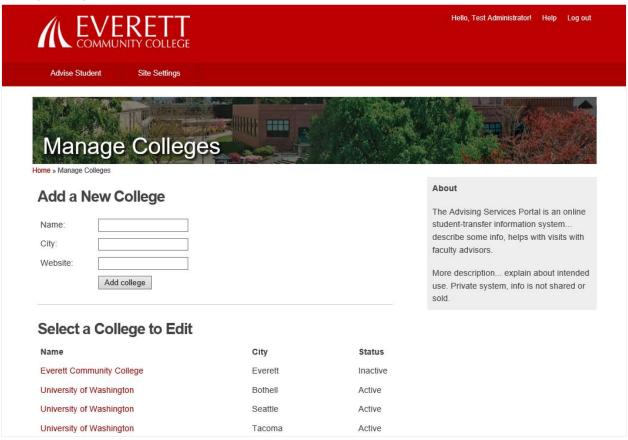
Allows faculty to advise students and operate on a student's behalf, temporarily linking the two accounts by enabling session variables that are unique to students. Students can be located by first name, last name, full name, student ID number, email address, or by viewing the full student roster. An individual student can be selected from the output of search results. Advising a student automatically redirects faculty to the student dashboard. An advising session can be ended by logging out, clicking the "Stop advising <student name>" button on the Advise Student page, or by selecting a different student to advise. Pages available as a student view are accessible to the faculty advisor while the advising session remains active. The three primary student pages; student dashboard, completed courses, and degree plans; all contain the student's name in the page heading for clarity.

# 8.14 SITE SETTINGS



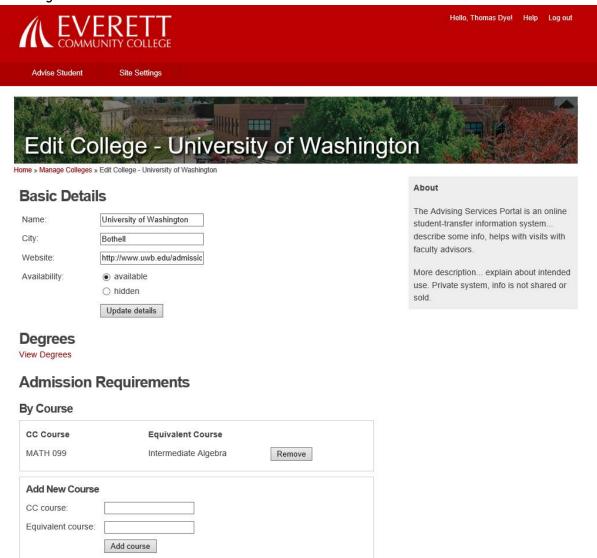
Allows faculty in the editor or administrator roles to manage site content through administrative forms.

# 8.14.1 Manage Colleges



Contains the list of available colleges that administrators have added to the Advisor Services Portal. New colleges are created inactive by default, which are hidden from view by students and advisors, but can be selected for modification by editors and administrators.

# 8.14.1.1 Edit College

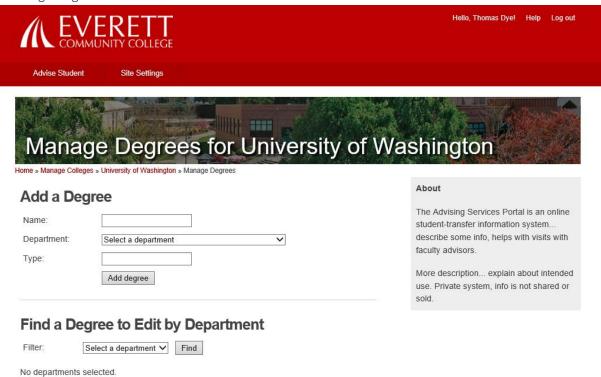


Edit college details. Administrators have additional functionality to make colleges available or unavailable for listing. College admission notes and requirements can be defined by equivalencies to Everett Community College courses, departments, and academic disciplines.

#### Known issues:

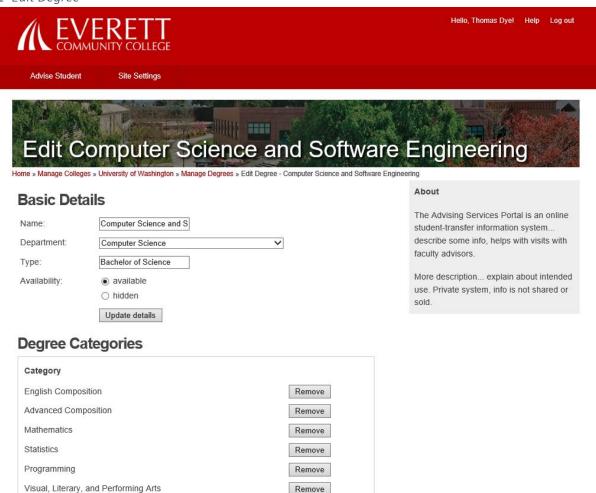
• The methodology for handling credits applied to departments and academic disciplines needs user testing to evaluate how effective it is in real-world usage.

# 8.14.1.1.1 Manage Degrees



This page is only available from the Edit College page, as degrees are tied to colleges and are not meant to stand alone. New degrees are created inactive by default, which are hidden from view by students and advisors, but can be selected for modification by editors and administrators. Degrees are sorted by department.

# 8.14.1.1.1 Edit Degree

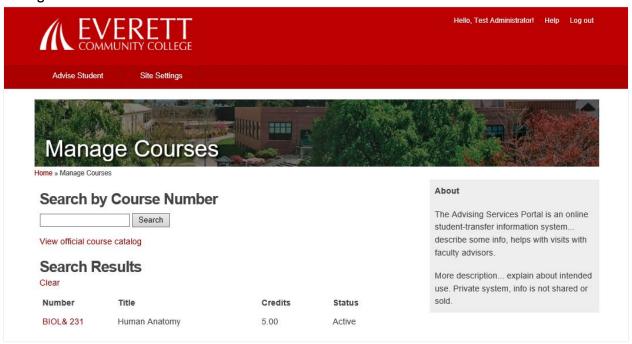


Edit degree details. Administrators have additional functionality to make degrees available or unavailable for listing. Degree categories must be defined for courses prior to adding admission and graduation requirements. Degree admission and optional graduation requirements can be defined by equivalencies to Everett Community College courses and academic disciplines. Courses must be categorized at the time they are added to populate the correct section for student plans and on the dashboard.

#### Known issues:

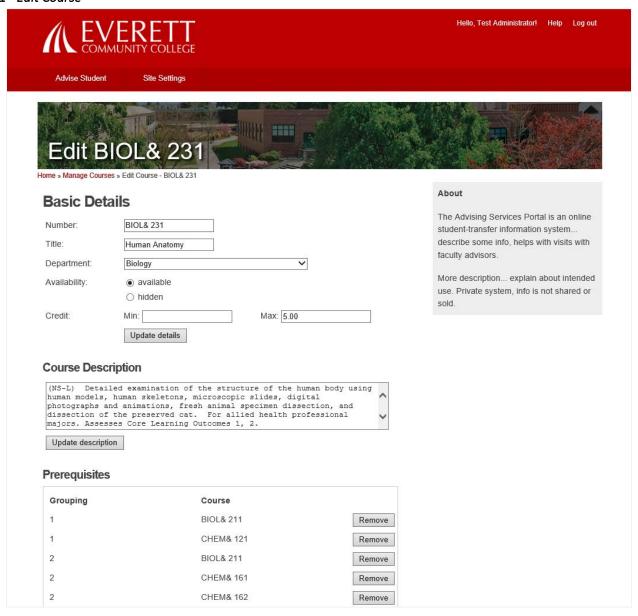
Adding required credits by category is not currently used within the other site structure.

# 8.14.2 Manage Courses



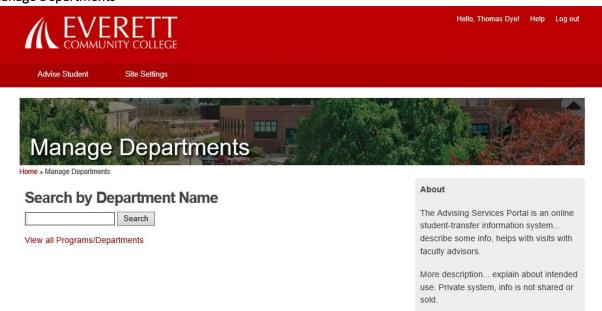
Allows search by Everett Community College course numbers by partial name. Courses displayed in search results can be selected for modification by editors and administrators.

#### 8.14.2.1 Edit Course



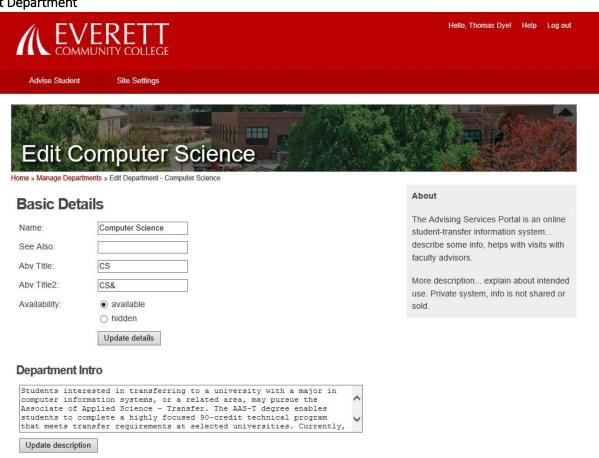
Edit course details. Administrators have additional functionality to make courses available or unavailable for listing. Courses are considered to be variable credit only if both a min and max credit is defined. Prerequisites and corequisites are added by grouping courses together, where all elements in a common group are considered to have an AND relationship. Each different grouping is considered to have an OR relationship. For a student to add a course with listed prerequisites or corequisite, it is necessary to satisfy at least one group relationship. Enrollment by placement exam or by instructor permission can also be set.

# 8.14.3 Manage Departments



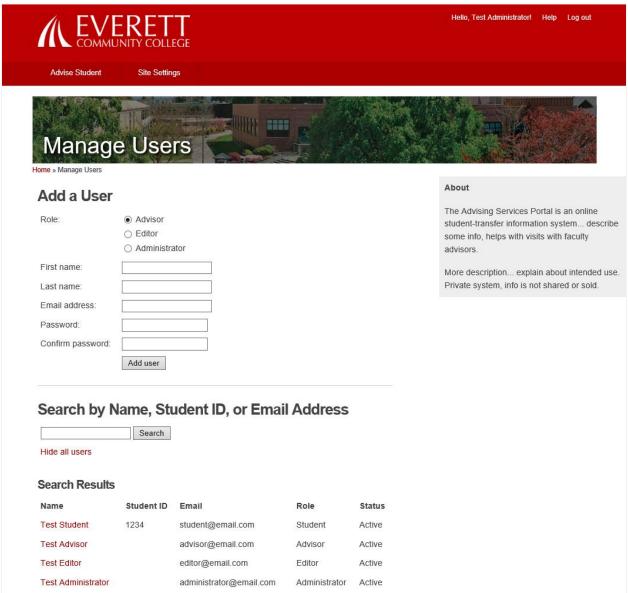
Allows search by Everett Community College departments by partial name.

# 8.14.4 Edit Department



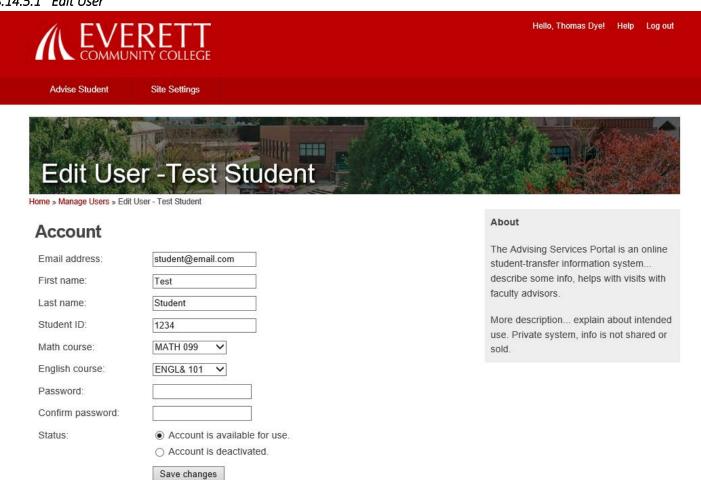
Edit basic information for an Everett Community College department. Administrators have the ability to select the availability of the department, where setting a department to 'hidden' will disable the department and all associated Everett Community College courses associated with that department.

# 8.14.5 Manage Users



Add a faculty member to the Advisor Services Portal and assign a user role. Accounts can be located by first name, last name, full name, student ID number, email address, or by viewing the full user roster. This page is restricted to website administrators only.

#### 8.14.5.1 Edit User



Accounts cannot be switched between students and faculty.

Existing users can be activated or deactivated, faculty can be reassigned roles, and all accounts can have account details modified. Fields displayed change as appropriate depending on the type of account viewed.