# Digital Content Creation Projects - Fall 2018

<table>
<thead>
<tr>
<th>Count</th>
<th>No.</th>
<th>Type</th>
<th>Project</th>
<th>College</th>
<th>Class</th>
<th>Staff Assigned</th>
<th>Status</th>
<th>Description</th>
<th>Event Date or Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>423</td>
<td>Video</td>
<td>Rob Thompson</td>
<td>CELS</td>
<td>MAF 475, MAF 465, MAF 345, MAF 320, MAF 100,</td>
<td>RB</td>
<td>On Hold</td>
<td>Continuation of #386. Post production of 10 - 12 videos concerning climate change and human use of coastal resources. International Seminar Coastal Hazards-Climate Change. Visualizations of numerous physical oceanographic processes and marine environments and how they relate to human societies.</td>
<td>Spring 2016 - on hold during sabbatical - Summer 2017</td>
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<tr>
<td>4</td>
<td>612</td>
<td>Web &amp; Video</td>
<td>Earl Smith</td>
<td>A&amp;S, CHS</td>
<td>AAF/HIS 150; AAF/HIS 356; AAF 300 &amp; AAF 390.</td>
<td>RB</td>
<td>On Hold</td>
<td>Web and video project. Roy Bergstrom will film/document on location activities and programs in Cabo Verde. The following Departments will be conducting programs that will be filmed and documented: Africana Studies/History/Nursing/Art &amp; Art History/ Political Science</td>
<td>Start Aug + Fall 2017</td>
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<tr>
<td>5</td>
<td>615</td>
<td>Video</td>
<td>David Brown, <a href="mailto:david_h_brown@uri.edu">david_h_brown@uri.edu</a></td>
<td>A&amp;S</td>
<td>COM 271 / CSC 271 (cross-listed)</td>
<td>RB</td>
<td>On Hold - No Time</td>
<td>animate HTML code to first add boxes around block tag regions (color coded by level?), then fade out content and close tags leaving just the start tags, rotate to form triangles with outermost tag at top, then finally show a tree of element nodes (rooted in HTML) to show the transformation from HTML code to the Document Object Model in the browser. Subsequent animations might show how CSS selectors apply to different areas of the DOM. Ideally, there would be reusable/scriptable code behind the animation so that different HTML code could be transformed, but this would not be essential.</td>
<td>As soon as possible</td>
</tr>
<tr>
<td>6</td>
<td>626</td>
<td>Video</td>
<td>Jake Fonseca</td>
<td>A&amp;S</td>
<td>Dan</td>
<td>Started</td>
<td>7 Summer classes - edit into video modules in Mediasite Channel.</td>
<td>Summer 2018</td>
<td></td>
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<tr>
<td>7</td>
<td>627</td>
<td>VR</td>
<td>Chris Hemme</td>
<td>Health Sciences</td>
<td>BP552 Bioinformatics I, PBS403/504 Pharmacokinetics I/Ii, Other Pharmacy classes</td>
<td>RB</td>
<td>Started</td>
<td>VR - These interactions would include: - exploding the molecule into its constituent parts (subunits, ligands/drugs, etc.) - independent manipulation of the constituent parts - ability to reassemble the molecule to study interactions - ability to modify the chemical structure of drugs or replace them with similar drugs to determine the effects on ligand binding &amp; The app would ideally have the following features: • Exploded view allowing direct independent manipulation of the constituent parts of the molecule • A virtual room &quot;instructor mode&quot; where multiple people can log in at the same time with one or more users (instructors) manipulating the molecule while the other users (students) watch. • A quiz mode where students attempt to fit a ligand to the active site of a molecule and the result is scored based on the established structure • Cheminformatics mode where the user can change the structure of the ligand or choose from similar ligands to see how the shape of the ligand affects binding to the target molecule</td>
<td>As soon as possible</td>
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VR - Methotrexate (MTX) is a small organic molecule to treat cancer (breast, leukemia, lymphoma) and autoimmune diseases (psoriasis, rheumatoid arthritis, and Crohn’s diseases). MTX’s anticancer action is due to its inhibitory activity against the enzyme dihydrofolate reductase (DHFR). Inhibition of DHFR leads to partial depletion of the coenzyme tetrahydrofolic acid (THFA) required for the synthesis of Thymine, a crucial building block of DNA. MTX binds to DHFR 1,000 times more tightly than folate, blocking the action of DHFR.

We propose to create VR files that (1) compare/contrast binding of the natural folic acid and MTX; (2) show the close proximity between the nicotine ring of the cofactor NADPH and the heterocyclic ring of the natural folic acid and the opposite situation for MTX (this explains the inhibitory action of MTX); (3) the structural basis of MTX resistance based on steric constraints in the active site.

This project requires manipulation of MTX structures and active ligand binding using Chimera X software and creation of the corresponding VR files. The students will learn the importance of active site binding and geometry for enzyme efficiency, drug action, and drug resistance.

We propose to create a MTX project team that involves one STA student and one pharmacy student (Rachel Carley, P3) and Dr. Cho in the College of Pharmacy.

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VR - I would like to create a medicinal chemistry unit using virtual reality technology. I envision showing the students a series of small molecules called the carmaphycins. These metabolites were originally isolated from a marine microbe called a cyanobacteria. Researchers found that the natural molecules showed the ability to inhibit the function of the proteasome of the malaria parasite. Scientists then created a series of synthetic derivatives based on the carmaphycin core structure to improve the anti-malarial activity and decrease the cytotoxicity to human cells. I would like to show a series of synthetic molecules with their 3D structures and how they bind into the catalytic site in the malaria parasite’s proteasome. This will illustrate to the class how altering the structure of a small molecule inhibitor can improve its ability to bind to a target.

Fall 2019

WEB - An extension to the recently completed JMeter project, for students to apply the tool for helping to check the status of select URI websites.

Fall 2018

WEB - Adding additional items and updating materials in an existing online educational program.

Summer 2018

Interactive VR Experience on Cash Donation for International Disaster Relief

Fall 2018

Digital Video associated with a Web Module for online course

Start now, to be used in Spring 2019 semester

This project is a continuation of work on the visualizations of storm impacts Project #611. In this phase, students will recreate the visualizations they have already made for Bristol, Warren, and Barrington (RI), but make some changes to the water depths represented to correct errors. This work entails:
1) altering scripts to add a unit conversion (meters to feet)
2) altering scripts to add more “bins” to account for the unit conversion
3) producing new decals using the corrected model outputs

Start now, to be used in Spring 2019 semester

Module 12: Cover Letters

Start 12/10/18