

Cover Sheet: Request 10076

PHA 5100 Drug Delivery Systems

Info

Process	Course Modify Ugrad/Pro
Status	Pending
Submitter	Beck,Diane Elizabeth beck@cop.ufl.edu
Created	2/25/2015 10:27:17 PM
Updated	2/27/2015 9:25:55 AM
Description	<p>This course occurs during Year 1 - Fall Semester of the new 2015 Curriculum.</p> <p>The course is a modification of the current PHA 5100 course in the following ways: Title, Credit Hours, Course Description, Pre-requisites, Instructors, Course Objectives, Weekly Course Schedule, Required Textbooks, and Methods of Evaluation/Grade determination.</p> <p>A UCC1 Form is being submitted per Dr. Julian since there has not been a recent UCC review of the course.</p>

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	COP - Interdisciplinary Studies	Whalen, Karen		2/26/2015
College	Approved	COP - College of Pharmacy	Beck, Diane Elizabeth		2/27/2015
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			2/27/2015
Statewide Course Numbering System					
Office of the Registrar					
Student Academic Support System					
Catalog					
College Notified					

Recommended SCNS Course Identification

1. Prefix PHA 2. Level 5 3. Number 100 4. Lab Code None

5. Course Title Drug Delivery Systems

6. Transcript Title (21 character maximum) Drug Delivery Systems

7. Effective Term Fall

8. Effective Year 2015

9. Rotating Topic? No

10. Amount of Credit 4

11. If variable, # minimum and # maximum credits per semester.

12. Repeatable credit? No

13. If yes, total repeatable credit allowed #

14. S/U Only? No

15. Contact Type Regularly Scheduled [base hr]

16. Degree Type Professional

17. If other, please specify: [Click here to enter text.](#)

18. Category of Instruction Introductory

19. Course Description

Foundational knowledge about the rational formulation and usage of drug products and preparations as they relate to the development of logically sound explanations and arguments for a patient's drug therapy.

20. Prerequisites

PHA 5XXX Personal and Professional Development I

21. Co-requisites

[Click here to enter text.](#)

22. Rationale and Placement in Curriculum

The first year of the Pharm.D. curriculum introduces principles and concepts. These are applied during years 2 and 3 as students complete a series of body system courses.

23. Complete the syllabus checklist on the next page of this form.

Syllabus Requirements Checklist

The University's complete Syllabus Policy can be found at:

http://www.aa.ufl.edu/Data/Sites/18/media/policies/syllabi_policy.pdf

The syllabus of the proposed course **must** include the following:

- ☒ Course title
- ☒ Instructor contact information (if applicable, TA information may be listed as TBA)
- ☒ Office hours during which students may meet with the instructor and TA (if applicable)
- ☒ Course objectives and/or goals
- ☒ A weekly course schedule of topics and assignments.
- ☒ Methods by which students will be evaluated and their grades determined
- ☒ Information on current UF grading policies for assigning grade points. This may be achieved by including a link to the appropriate undergraduate catalog web page:
<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.
- ☒ List of all required and recommended textbooks
- ☒ Materials and Supplies Fees, if any
- ☒ A statement related to class attendance, make-up exams and other work such as: *"Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the online catalog at:
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>."*
- ☒ A statement related to accommodations for students with disabilities such as: *"Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation."*
- ☒ A statement informing students of the online course evaluation process such as: *"Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>."*

It is **recommended** that the syllabus contain the following:

- ☒ Critical dates for exams or other work
- ☒ Class demeanor expected by the professor (e.g. tardiness, cell phone usage)
- ☒ The university's honesty policy regarding cheating, plagiarism, etc.

Suggested wording: UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

- ☒ Contact information for the Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc/>, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies

PHA 5100 Drug Delivery Systems

Fall 2015 10 weeks, 4 Credit Hours

Course Purpose:

The primary purpose of this course is for the learner to achieve a clear and comprehensive understanding of the rational formulation and usage of drug products and preparations as they relate to development of logically sound explanations of and arguments for a particular patient's drug therapy.

Course Faculty and Office Hours

(See Appendix A for Contact Information)

Teaching Partnership Leader: William Cary Mobley, R.Ph., Ph.D.

Email: mobley@cop.ufl.edu

Office: HPNP 1315

Phone: 352-273-6282

Office Hours: TBA

Academic Coordinator

Christine Salama, M.A. Email: csalama@ufl.edu

Office: HPNP 4312 Phone: 352-273-5617

Office Hours: by email and appointment

This Course Will Prepare You to Perform the Following Activities Which the Public Entrusts a Pharmacist to Perform:

1. **EPA A3.** Formulate evidence-based care plans. (In collaboration with an interprofessional team)
2. **EPA E1.** Safely and accurately dispense medications within a medication use system including supervision of pharmacy technicians.

Conceptual Categories and Associated Performance Objectives:

<p><i>1. Drug Development, Approval, and Manufacture</i></p> <ol style="list-style-type: none">a. Explain the drug development and approval processes for new chemical entities, generic and orphan drugs, drugs for compassionate use, and for changes in the drug product.b. Describe the most critical concepts in the manufacture of sterile and non-sterile dosage forms, the standards for good manufacturing practices, and nature of compendial standards for chemicals, devices, and drug products.
<p><i>2. Biopharmaceutics</i></p>

<ul style="list-style-type: none"> a. Describe the concepts important for understanding and predicting the relationships between the physicochemical properties of the drug, the drug's fate in the body after its administration as a dosage form, and the resulting onset, duration, and intensity of drug action. b. In the therapeutic reasoning process, assess the biopharmaceutical properties of drug products and drugs during the evaluation of therapeutic alternatives, and during the implementation and monitoring of therapeutic selection(s).
<p><i>3. Fundamental Physicochemical Properties</i></p> <ul style="list-style-type: none"> a. Describe the fundamental physicochemical properties that are important for the rational design and formulation of stable dosage forms. b. Develop causal explanations for the effects of fundamental physicochemical properties on the biopharmaceutical behavior of drugs and dosage forms in the body. c. In the diagnostic reasoning process, determine and explain any implicated relationships between the drug's physicochemical properties and drug therapy problems.
<p><i>4. Chemical and Physical Drug Stability</i></p> <ul style="list-style-type: none"> a. Explain the major mechanisms of drug and dosage form chemical and physical instability, including formulation ingredient incompatibilities. b. Describe formulation, packaging, and storage approaches for optimizing drug and drug product stability. c. Assess and recommend solutions for potential chemical and physical stability problems during the evaluation of therapeutic alternatives and during the implementation and monitoring of therapeutic selection(s).
<p><i>5. Drug Dosage Forms</i></p> <ul style="list-style-type: none"> a. Explain the nature of all pharmaceutical dosage forms, including how they are designed, formulated, manufactured, compounded, and quality tested. b. In the therapeutic reasoning process, assess and recommend the dosage form(s) and route(s) of administration that will best enable the patients to reach his or her therapeutic goal(s).
<p><i>6. Drug Dosage Form Administration</i></p> <ul style="list-style-type: none"> a. Explain the anatomical and physiological properties important for drug delivery for all parenteral and non-parenteral routes of drug administration. b. In the diagnostic reasoning process, determine and explain any implicated relationships between the dosage form or its administration and drug therapy problems. c. In the therapeutic reasoning process, assess and recommend the route(s) and techniques of dosage form administration that will best enable the patient to reach his or her therapeutic goal(s) and minimize untoward effects.
<p><i>7. Pharmaceutical Calculations</i></p> <ul style="list-style-type: none"> a. Demonstrate competence in performing pharmaceutical calculations according to standards that maximize accuracy and precision and to minimize the risk for error. b. Assess the reasonableness of answers based on the understanding of the goals and purpose of the calculation. c. Calculate therapeutic and nutritional needs for the patient and the formulation, dosing, and delivery requirements for products and preparations.
<p><i>8. Drug Preparation Compounding</i></p> <ul style="list-style-type: none"> a. Explain compounding skills that are used for the most common types of sterile and non-sterile preparations, employing standards of good compounding practices and compounding regulations.

<ul style="list-style-type: none"> b. Integrate knowledge of physicochemical properties, biopharmaceutics, and dosage form design and administration with knowledge of pharmacotherapy and the patient's health status, to assess the ability of the proposed compounded preparation to achieve the therapeutic goals for the patient. c. Provide rational counseling advice for the proper usage of compounded preparations.
<p>10. Control of Drug Delivery</p> <ul style="list-style-type: none"> a. Describe the rationale and approaches for the spatial and temporal control of drug delivery, describing examples, advantages and disadvantages for each route of drug administration. b. In the therapeutic reasoning process, be able to explain the rationale for selecting controlled delivery products for use in specific patients and the rationale for choosing among different controlled release products of the same drug. c. Make recommendations for switching between controlled and immediate release products during patient therapy.
<p>11. Pharmaceutics of Recombinant Therapeutic Proteins and Related Biologics</p> <ul style="list-style-type: none"> a. Explain the production, physicochemical properties, stability, formulation, and delivery of therapeutic proteins that distinguish biologics from small molecule compounds. b. Understand the development and approval process for biosimilar biological products. c. Recommend proper storage, handling, and administration techniques of therapeutic proteins.

Pre-Requisite Knowledge and Skills

PHA XXXX – Personal and Professional Development I

Weekly Course Outline

Week	Related Learning Objective	Weekly Learning Activities	Instructor Contact Hours
1	1,2,3	<p>Course Overview New Drug Development, Introduction To Biopharmaceutics, Pharmaceutical Preformulation</p> <p>Online/Individual Study: Educational Videos: Self-Assessment activities</p>	6 hr
2	4,5,6	<p>Drug Stability Parenteral Drug Delivery</p> <p>Online/Individual Study: Educational Videos: Self-Assessment activities</p>	5 hr

Week	Related Learning Objective	Weekly Learning Activities	Instructor Contact Hours
3	7 2,3,5,6	<i>Parenteral Drug Delivery</i> <i>Introduction to Pharmaceutical Calculations</i> Online/Individual Study: Educational Videos: Self-Assessment activities In-class Activity (2 hrs): In-Class Problem-Solving Exercise	5 hr 2 hr
4	5,6,7,8	<i>Overview Of Pharmacy Compounding</i> <i>Powders And Granules</i> <i>Capsules</i> Online/Individual Study: Educational Videos: Self-Assessment activities Assessment-In Class: Exam 1 – New Drug Development to Parenterals	5 hr 2hr
5	5,6,7,8 5,6,8	<i>Tablets</i> <i>Oral Liquids - Solutions And Related Liquids</i> <i>Suspensions</i> Online/Individual Study: Educational Videos: Self-Assessment activities In-class Activity (2 hrs): In-Class Problem-Solving Exercise	5 hr 2 hr
6	5,6,7,8	<i>Emulsions</i> <i>Sublingual And Buccal Drug Delivery</i> <i>Rectal Drug Delivery</i> Online/Individual Study: Educational Videos: Self-Assessment activities Assessment-In Class: Exam 2 – Intro to Pharmacy Compounding to Tablets	5 hr 2 hr
7	5,6	<i>Topical Drug Delivery</i> <i>Vaginal Drug Delivery</i>	

Week	Related Learning Objective	Weekly Learning Activities	Instructor Contact Hours
		<i>Ophthalmic Drug Delivery</i> Online/Individual Study: Educational Videos: Self-Assessment activities In-class Activity (2 hrs): In-Class Problem-Solving Exercise	5 hr 2 hrs
8	5,6,9	<i>Intranasal Drug Delivery^{e,f}</i> <i>Pulmonary Drug Delivery^{e,f}</i> <i>Advanced Drug Deliveryⁱ</i> Online/Individual Study: Educational Videos: Self-Assessment activities Assessment-In Class: Exam 3 – Emulsions to Ophthalmic Drug Delivery	5 hr 2 hr
9	10	<i>Advanced Drug Delivery</i> <i>Pharmaceutical Biotechnology^j</i> Online/Individual Study: Educational Videos: Self-Assessment activities In-class Activity (2 hrs): In-Class Problem-Solving Exercise	5 hr 2 hr
10		Final Exam (Core Concepts are Comprehensive)	
		Instructor Contact Time	60 hrs + Final Exam

Required Resources

1. Allen LV, Ansel HC. *Pharmaceutical Dosage Forms and Delivery Systems*, 10th Ed., Lippincott Williams and Wilkins.
2. Washington N, Washington C, Wilson C. *Physiological Pharmaceutics: Barriers to Drug Absorption*, 2nd Ed, Taylor & Francis, 2001. An E-book available on-line at UF library.
3. Amiji MM, Cook TJ, Mobley W. eds. *Applied Physical Pharmacy 2e*. ew York, NY: McGraw-Hill; 2013. Available in Access Pharmacy.
4. Thompson, JE. *A Practical Guide to Contemporary Pharmacy Practice*, 3rd Edition. Lippincott Williams and Wilkins.

Additional Resources

1. Micromedex – Online at UF library
2. DrugBank – Online database

Materials and Supplies Fees: None

Student Evaluation & Grading

Evaluation Methods and how grades are determined

Assessment Item	Grade value
Exams (4)	80% (Each exam is worth 20% of the course grade)
In-Class Collaborative Problem Solving Exercise (4 Occurrences) See Appendix B	20% (Each is worth 5% of the course grade and each requires mandatory attendance, participation, and written problem-solving documentation). These exercises will be graded using rubrics. (Appendix B)

Grading Scale

> 92.5%	A
89.5-92.4%	A-
86.5-89.4%	B+
82.5-86.4%	B
79.5-82.4%	B-
76.5-79.4%	C+
72.5-76.4%	C
69.5-72.4%	C-
66.5-69.4%	D+
62.5-66.4%	D
59.5-62.4%	D-
< 59.4%	E

Rounding of grades: Final course grade will only be rounded up if the decimal is 0.5 or higher. The above scale depicts this policy.

Educational Technology Use

The following technology below will be used during the course and the student must have the appropriate technology and software. **Appendix A** outlines who to contact if you have questions about technology.

1. ExamSoft®
2. Canvas® Learning Management System

Class Attendance Policy

Policy Across All 1PD-3PD courses:

Class attendance is mandatory for active learning sessions such as problem-solving sessions, case discussions, and laboratory sessions. Student attendance may be excused by the Teaching Partnership Leader in the following situations: documented illness, family emergencies, religious holidays, and other reasons of serious nature. Conflict with work schedules is an unexcused absence.

Requests for excused absences MUST be made by an email to the Academic Coordinator and the course facilitator prior to the scheduled session. The student is responsible for follow up and confirming whether the absence is excused or unexcused. The Teaching Partnership Leader and your campus specific director must be CCD in this communication. The following format is recommended:

To: Academic Coordinator and Campus Course Facilitator

CC: Teaching Partnership Leader and your specific campus director

Subject: PHA XXXX – Excused Absence request

Dear Prof. _____,

Professionally and politely request an excused absence.

Explain the nature of conflict and rationale for receiving an excused absence.

Thank the faculty member for their consideration of your special request.

Salutation,

Type in your full name and last 4 digits of UF-ID #, and Campus Name

Failing to follow this policy will render the absence not excusable. A request for an "excused absence" does not guarantee acceptance. No precedence can be drawn from any courses in the College of Pharmacy or any other college within University of Florida.

Makeup assignment(s) will be made for any excused absence(s) and must be submitted **within one-week of the missed session(s)**. If the situation leads to missing multiple class sessions and makeup becomes difficult, the student and Teaching Partnership Leader will meet with the Associate Dean of Student Affairs to explore options such as a remediation plan or course withdrawal.

Class attendance requires full engagement of activities and discussions. The following are unacceptable during class: 1) read non-course related materials that are either in hard-copy or web-based, 2) study for other courses, 3) use a laptop for activities that are not course-related. Class participation will be reduced in such situations.

Please refer to the University Attendance Policy at
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Additional Policy Specific to This Course:

For the four, in-class problem solving sessions, attendance is mandatory

Quiz/Exam Policy

Policy across All 1PD-3PD courses:

1. Students must arrive and be seated promptly to be eligible to take the exam. Students who arrive late for the exam will not be allowed to start the exam if they are more than 30 minutes late or if another student has left the room after seeing the exam.
2. No talking or other disruptive behavior during the distribution or taking of the exam.
3. Calculators must meet the following requirements: Only nonprogrammable calculators are allowed during exams for this course.
4. If you encounter calculator problems (e.g., dead battery), contact the Proctor.
5. Nonessential materials are NOT allowed at the student's desk during examination periods. Please leave all nonessential materials outside of or in the front of the examination room.
6. Other exam rules may be instituted during the progression of the course.
7. Once the exam commences, students may not leave the room without first turning in the exam. Once the exam is turned in, the examination period for the student is considered complete and the student must leave the examination room. If there is urgent need to use the restroom, the Proctor will provide guidance.

Failure to follow exam rules may be considered as evidence of academic dishonesty.

Additional Policy Specific to This Course:

Students must contact the course coordinator within 24 hours of the exam to arrange for a makeup exam that may be offered, depending on the circumstances surrounding the tardiness.

Make-up Quiz/Exam Policy

Policy across All 1PD-3PD courses:

Makeup exams are given only under special circumstances. If the student is unable to take a scheduled examination, the Teaching Partnership Leader and Academic Coordinator must be notified before the examination. In addition, a written letter of explanation, requesting that the absence from the exam be excused, must be presented before the exam or immediately afterwards. An excused absence is allowable when: 1) the student is hospitalized and/or has been advised by a licensed medical practitioner or hospital not to attend the exam, or 2) if there is a documented death of an immediate family member. All excused absences will be considered on an individual basis by the Teaching Partnership Leader. For unusual situations (e.g., wedding that was planned before admission), the faculty member will communicate with student affairs.

Depending on the decision, a comprehensive exam may be given, which will contain material from all previous exams. The questions on the makeup exam may be in the form of essay, short answer, or multiple-choice. With the exception of highly extenuating circumstances, failure to follow the prescribed procedures or failure to attend the announced comprehensive examination will result in a grade of zero for that exam. A request for an "excused absence" does not guarantee acceptance. No precedence can be drawn from any courses in the College of Pharmacy or any other college within University of Florida.

The makeup exam must be taken within one-week of the missed exam. In extenuating circumstances (e.g., hospitalization, faculty availability), the instructor may arrange an alternate deadline for the exam.

The student may contact the instructor to obtain details about why points were deducted. The student has two weeks following the return of the Exam to clarify any questions and appeal any possible grading errors. Any appeals on the final examination must be made in writing and submitted to your facilitator. **When an appeal is made to re-grade an Exam, the entire Exam will be reevaluated and scored.**

Additional Policy Specific to this Course:

An alternate make-up exam can be made available for students with excused absences or extenuating circumstances at the discretion of course faculty.

Policy on Old Quizzes and Assignments

Old quizzes and assignments are not provided.

General College of Pharmacy Course Policies

The College of Pharmacy has a website that lists course policies that are common to all courses. This website covers the following:

1. University Grading Policies (Assigning Grade Points)
2. Concerns, Appeals, and Complaints
3. Academic Integrity Policy
4. Psychomotor and Learning Expectations
5. How to Request Learning Accommodations
6. Faculty and Course Evaluations
7. Computer and Other Technology Requirements
8. Expectations in Class and Other Learning Activities
9. Communications - Discussion Board Policy
10. Communications - Email
11. Religious Holidays
12. Counseling & Student Health Services
13. How to Access Services for Student Success
14. Faculty Lectures/Presentations Download Policy

Please see the following URL for this information:

<http://www.cop.ufl.edu/wp-content/uploads/dept/studaff/policies/General%20COP%20Course%20Policies.pdf>

Appendix A. Faculty and Staff: Who to Contact

Academic Coordinator:

1. Questions about dates, deadlines, meeting place
2. Availability of handouts and other course materials
3. Assignment directions
4. Questions about grade entries gradebook (missing grades, wrong grade)
5. Assistance with ExamSoft®

Teaching Partnership Leaders

1. Issues related to course policies (absences, make up exams, missed attendance)
2. Questions about grades
3. Concerns about performance
4. Guidance when there are performance problems (failing grades)
5. General questions about content

Other Teaching Partnership Faculty Members

1. Questions about specific content

Technical Support:

Contact the College of Pharmacy MediaHelp Desk for assistance with course-related technical issues (e.g., Canvas access, video access, printing of documents). The MediaHelp Desk may be reached via the following:

Phone: 352-273-6281 (9am-4PM ET)

Email: mediahelp@cop.ufl.edu (response is delayed outside of M-F 9AM-4PM ET)

Contact the University of Florida Computing Help Desk for addresses issues related to:

1. Gatorlink accounts,
2. Gatorlink email,
3. myUFL, and
4. ISIS.

Phone: (352)-392-4357

Appendix B. Problem-Solving Rubric

PROBLEM SOLVING VALUE RUBRIC for more information, please contact value@aacu.org



Definition

Problem solving is the process of designing, evaluating, and implementing a strategy to answer an open-ended question or achieve a desired goal.

Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.

	Capstone 4	Milestones 3 2		Benchmark 1
Define Problem	Demonstrates the ability to construct a clear and insightful problem statement with evidence of all relevant contextual factors.	Demonstrates the ability to construct a problem statement with evidence of most relevant contextual factors, and problem statement is adequately detailed.	Begins to demonstrate the ability to construct a problem statement with evidence of most relevant contextual factors, but problem statement is superficial.	Demonstrates a limited ability in identifying a problem statement or related contextual factors.
Identify Strategies	Identifies multiple approaches for solving the problem that apply within a specific context.	Identifies multiple approaches for solving the problem, only some of which apply within a specific context.	Identifies only a single approach for solving the problem that does not apply within a specific context.	Identifies one or more approaches for solving the problem that do not apply within a specific context.
Propose Solutions/Hypotheses	Proposes one or more solutions/hypotheses that indicates a deep comprehension of the problem. Solution/hypotheses are sensitive to contextual factors as well as all of the following: ethical, logical, and cultural dimensions of the problem.	Proposes one or more solutions/hypotheses that indicates comprehension of the problem. Solutions/hypotheses are sensitive to contextual factors as well as the one of the following: ethical, logical, or cultural dimensions of the problem.	Proposes one solution/hypothesis that is "off the shelf" rather than individually designed to address the specific contextual factors of the problem.	Proposes a solution/hypothesis that is difficult to evaluate because it is vague or only indirectly addresses the problem statement.
Evaluate Potential Solutions	Evaluation of solutions is deep and elegant (for example, contains thorough and insightful explanation) and includes, deeply and thoroughly, all of the following: considers history of problem, reviews logic/reasoning, examines feasibility of solution, and weighs impacts of solution.	Evaluation of solutions is adequate (for example, contains thorough explanation) and includes the following: considers history of problem, reviews logic/reasoning, examines feasibility of solution, and weighs impacts of solution.	Evaluation of solutions is brief (for example, explanation lacks depth) and includes the following: considers history of problem, reviews logic/reasoning, examines feasibility of solution, and weighs impacts of solution.	Evaluation of solutions is superficial (for example, contains cursory, surface level explanation) and includes the following: considers history of problem, reviews logic/reasoning, examines feasibility of solution, and weighs impacts of solution.
Implement Solution	Implements the solution in a manner that addresses thoroughly and deeply multiple contextual factors of the problem.	Implements the solution in a manner that addresses multiple contextual factors of the problem in a surface manner.	Implements the solution in a manner that addresses the problem statement but ignores relevant contextual factors.	Implements the solution in a manner that does not directly address the problem statement.
Evaluate Outcomes	Reviews results relative to the problem defined with thorough, specific considerations of need for further work.	Reviews results relative to the problem defined with some consideration of need for further work.	Reviews results in terms of the problem defined with little, if any, consideration of need for further work.	Reviews results superficially in terms of the problem defined with no consideration of need for further work.