

!" "#!\$%&' () ' ! * # ' + & (' ,

I# 0(1: . -!(*5! 6('4(1. !&-) < (-7!2+). *1)9+!)1. -(14-. !(*5!K450. !1: . !6('4. !, 9!1: . !)*9, - < (1), *!
&- . 2. *1. 5!)*!- . '(1), *!1, !&(-1)+4'(-!/, ', 0)+('!F4. 2!), *2!>?@A!''3BC#!

!
!

9"#\$%&'%() #*+(%, -, '#. /01&) +324#! 22+22+6#

9"5"B9"! "#\$%&'%() 2@L: . !5. &(-1 < . *!&(-1)+&(1. 5!)*!M*)6. -2)17!@A!(22. 22 < . *!1, 9!N-)11. *!
0, << 4*)+(1), *#!P, !, 1: . -!&-, 0-(<!' . (-*)*0!, 4!+, < . 2! = . - . !(22. 22. 5!9, -!1: . 2. !&-, 0-(<2!54-)*0!
QR!ES" T8" U#!

A"5"#\$%&'%() @N. !(22. 22. 5!V@A!E3!G3!H!(*5!I!>2. . !(/, 6. C#L: . 2. !&-, 0-(<!' . (-*)*0!, 4!+, < . 2!
= . - . !('2, !(22. 22. 5!)*QR!ES" T8" U#!

!
!

<"#5/)) (%>#&;#! 22+22) +, 0#\$%&1+22#

C, 20%/) +, 0324@W, -!1: . !M*)6. -2)17!@A!(22. 22 < . *!1, 9!N-)11. *!0, << 4*)+(1), *3!J-#!0: -)2!X)11)*0!
&- , 6)5. 5!1: . !9)* ('!1. - < !& (& . -!9, -!Y?A@!HBZ!8!0, *2. -6(1), *!Y), ', 07!1, !1: . ! < . < / . -2!, 9!1: . !?@A!
[4/+ , < <)11. . #!L:)2!+, 4-2. !2. -6. 2!(2!1: . !+ (&2!, * . !. %&. -). *+ . !9, -!, 4-!\$+, ', 07!(*5!\$6, '4!), *(-7!
Y), ', 07!+, *+ . *1-(1), *!2145. *12#!

!

W, -!1: . ! \ # [#! & -, 0-(< ! = . !42. 5!1: . !] ? * F4)-7!(*5!Q* ('72)2!^4/-)+_!(*5!1: . !] A-('!0, << 4*)+(1), *!
^4/-)+_!1, !(22. 22!1: . !, -('!5. 9. *2. 3!(1+ (&2!, * . !. 6. *1!)*!&(-1)('!94'9)'' < . *!1, 9!1: . ! \ (21. -!, 9! [+). *+ . !
J. 0-. . #!Q!+, &7!, 9!1: . 2. !-4/-)+2!2!)*+ '45. 5!)*!1: . !Q&&. *5)!>W)O#!QTC#L: . 2. !-4/-)+2!(-. !/(2. 5!, *!
1: . ! ` Q@M\$!-4/-)+2!5. 6. ', & . 5!/7!1. (<2!, 9!9(+4'17! . %&. -12!- . &- . 2. *1)*0!+, ". 0. 2!(*5!4*)6. -2)1. 2!
(+-, 22!1: . !M*)1. 5![1(1. 2#L: . ! ` ('4. !^4/-)+!J. 6. ', & < . *1!V-, K. +1! = (2!2&, *2, -. 5!/7!1: . !
Q22, +)(1), *!1, 9!Q < . -)+(*!0, ". 0. 2!(*5!M*)6. -2)1). 2#

!

5() D:-, '#\$%&1+6/%+@#L: . !+, < /)* . 5!]?*F4)-7!(*5!Q* ('72)2a!(*5!aA-('!0, << 4*)+(1), *a!-4/-)+! = (2!
(&&'). 5!1, !('!Z! \ # [#!2145. *12!1: (1!2+: . 54'. 5!(*!, -('!5. 9. *2. !)*!54-)*0!QR!ES" U8" Z#!

!

5() D:-, '# < 8(%(10+%20-12@#L: . !, -('!5. 9. *2. !)2!, * . !, 9!1: . !9)* ('!- . F4)-. < . *12!1: (1!, 4-! \ # [#!
2145. *12!+, < &' . 1. #!Y7!1:

E"#5/)) (%>#& ;# 22+22) +, 0#F+2/:02#

A(-, #G-, 6-, ' 2@1: . !5. &(-1<. *1!=(2!6. -7!5)2(&& ,)*1. 5!1, !'. (- *!1: (1!, *'7!9, 4-!&(&. -2!9-, <! , 4-!
Y?A@!HBZ!+, 4-2. !=. -. !42. 5!)*!1: . !M*)6. -2)17!@A!(22. 22<. *1!, 9!N-)11. *!0, <<4*)+(1), *#!N. !
=. -. !4*5. -!1: . !)<&- 22), *!1: (1!1: . !5. &(-1<. *1!=, 4'5!/. !&-, 6)5. 5!)=)1: !-. 24'12!9, -!1: . !. *1)-. !
+'(22!2, !1: (1!=. !+, 4'5!(2, !<(c. !42. !, 9!1: . 2. !(22. 22<. *123!/41!+. -1()*'7!4*5. -21(*5!1: . !
+, *21-()*'12!(*5!)<)1(1), *2!, 9!1: . !?@A!24/+, <<)11. . !<. </- 2!0)6. *!1: . !(-0. !*4</- !, 9!&(&. -2!
1: . 7!=. -. !1(2c. 5!)=)1: !. 6('4(1)*0#\ , 6)*0!9, -=(-5!1, !5. &(-1<. *1!)=)'!+, *1)*4. !=)1: !, 4-!, =*!V@A!
(22. 22<. *1!, 9!1: . !Y#Q#!(*5!Y#[#!&- , 0-<2#!
!

W, -!1: . !\#[#!&- , 0-<3!=. !: , &. 5!('! , 9!, 4-!2145. *12! =, 4'5!2+, -. !(1!G!, -!(/ , 6. !(2!Gd&- , 9)+. *1!
>Hd. %. <&'(-7C#@ , c)*0!(1!1: . !)*5)6)54('!V@A2!(22. 22. 5!>W)04-. !J''C3!1: . !(6. -(0. !2+, -. !=(2!G!, -!
(/ , 6. !9, -!(''!9, 4-!V@A2#!e, =. 6. -3!)1!+(*/. !2. . *!9-, <!1:)2!2(<. !0-(&: !1: (1!2145. *12!('2, !2+, -. 5!E!
>d!/(2)+C!, -!'!>d<)*<('C!9, -!2. 6. -('! , 9!1: . !(22. 22<. *1!+-)1. -)(#!Q!2<)'(-!&(11. -*!+(*!/. !, /2. -6. 5!
)!W)04-. !JE3!1: . !(6. -(0. !. (-* . 5!2+, -. !9, -!)*5)6)54('!(22. 22<. *1!+-)1. -)(#!? *!1:)2!0-(&: !=. !2. . !
1: (1!1: . !(6. -(0. !2+, -. !9, -!< , 2!1+-)1. -)(!)2!G!, -! : 0: . -3!/41!9, -!9, 4-!, 9!1: . !+-)1. -)(!1: . !(6. -(0. !

Average score

Scores

4 = Exemplary

3 = Proficient

2 = Basic

1 = Minimal

Organization: The organization of the paper is logical and clear. The conclusions are sequenced and the content of the paper is well organized. The thesis will be seamless and transitions are smooth.

Language: The language is appropriate for the discipline as well as the audience. The paper is free of jargon and technical terms.

Delivery: Delivery is effective. The speaker uses appropriate contact and vocal variety. The speaker's posture, eye contact, and vocal variety are appropriate for the audience.

Supporting Information: The supporting information is relevant and credible. The speaker uses appropriate central ideas and supporting details to develop the central message.

Central Message: The central message is clearly stated and supported. The speaker uses appropriate language and supporting details to develop the central message.

Hypothesis/Question: The hypothesis or question is manageable and testable. The speaker uses appropriate language and supporting details to develop the hypothesis or question.

Background Knowledge: The speaker uses appropriate background knowledge to support the hypothesis or question. The speaker uses appropriate language and supporting details to develop the hypothesis or question.

Design Process: The speaker uses appropriate design process to support the hypothesis or question. The speaker uses appropriate language and supporting details to develop the hypothesis or question.

Analysis: The speaker uses appropriate analysis to support the hypothesis or question. The speaker uses appropriate language and supporting details to develop the hypothesis or question.

Conclusion: The speaker uses appropriate conclusion to support the hypothesis or question. The speaker uses appropriate language and supporting details to develop the hypothesis or question.

Caveats: The speaker uses appropriate caveats to support the hypothesis or question. The speaker uses appropriate language and supporting details to develop the hypothesis or question.

G- /%#E1 "#Q6. -(0. !-4/-)+!2+, - .!. (-* . 5!9, -!. (+: !V@A!+-)1. -)(!. 6('4(1. 5#!

#

G-' /%+#EJ"#Q6. -(0. !-4/-)+!2+, -.!. (-* . 5!9, -!. (+: !V@A!+-)1. -)(!9, -!(!"!Z!2145. *12!. 6('4(1. 5!)*!QRIES" T8"U#!

!

F+1&)) +, 6(0-&, 2#;&%#\$%&' %() #C) D%&K+) +, 0@#L: . !9(+4'17!(-. !(= (-. !, 9!1: . !(-. (2!)*!=:)+ : !, 4-!
2145. *12!-. F4)-. !(55)1), *(!)*21-4+1), *(!*5!. %&. -). *+. 3!(*5!: (6. !5. +)5. 5!4&, *!21. &2!1: (1!2: , 4'5!
/. !1(c. *!1, !)<&- , 6. !2145. *1!, 41+, <. 2!>2. . !P. %![1. &>2C!/. ', =C#!

!

L+M0#50+D324#;&%#<:&2-, '#08+#* &&D@#', =C

!

. 08+%#F+;:+10-&, 2h!?*!0. * . -('3!1: . !9(+4'17!+, *1)*4. !1, !6('4. !1: . !-4/-)+!(2!(*! . 99. +1)6. !<. (24-. !9, -!
 (22. 22)*0!)9!, 4-!2145. *12!(-. !<. . 1)*0!, 4-!&- , 0-(<'! . (-*)*0!, 41+, <. 2#!N. !(-. !('2, !+, *9)5. *1!1: (1!
 1: . !)*+'42), *!, 9!(!7. (-8', *0!+, 4-2. !)*!1: . !+4--)+4'4<!1: (1!2&. +)9)+('7!9, +42. 2!, *1!1: . !V@A2!, 9!1: . !
 &-, 0-(<! =)'!1: (6. !(!2)0*)9)+(*13!&, 2)1)6. !)<&(+!1, *1!1: . !24++ . 22!, 9!, 4-! \#[#2145. *12#!Q55)1), *('73!
 /7!42)*0!1: . !2(<. !^4/-)+!7. (-!(91. -!7. (-3! =. ! =)'!)*+ . (2. !, 4-!21(1)21)+(!&, =. -!(*5!/. !(/'. !1, !
 . 6('4(1. !)9!(*7!, 9!, 4-!&- , 0-(<<(1)+!+: (*0. 2!<(c. !(15)99. - . *+ . !)*!2145. *1!, 41+, <. 2#!

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Program Learning Outcomes

1. biological e... from ions to ecosystems.
2. Der...
3. Incl... apply... scientific...
4. Clear... results of an observat... Scientific poster, and oral presentation.
5. Get... information...

A description of an exer... provides...
 true. *Scores: 4 = Exemplary / mastery... at 3 = Basic... The rubric... are...

Criteria	Capstone / Master	Score	PLO
Presentation	The introduction... The conclusion... The message and... Main claim is clear and...		
Delivery	Deliver... presentation com...		
Supporting material	Supporting material... message and... Main claim is clear and...		
Claim(s)	Main claim is clear and...		

Criteria	Capstone / M	SCORE*	PLO
Hypothesis/Question	hypothesis or question... significant and... that is...		
Background/Outline	Background/Outline... significant and... that is...		
Explanation	Explanation... the evidence in...		
Limitations	States a... discusses...		
Recognizes Limitations	Insight... discusses...		

G-' /%+#! N"!^4/-)+2!42. 5)!*(22. 22<. *1!, 9!\#[#2145. *1!, -(!5. 9. *2. !, 9!1: . 2)2#!