orm RESET

Michigan State University

SPECIALIST POSITION DESCRIPTION

Please complete this form and attach it to all requests to establish a specialist position.

1. Specify minimum level of formal education and work experience or other qualifications required to meet the performance standards associated with this position.

   Education (degree(s) and discipline or field of study): Ph.D. in Biological Sciences

   Experience (number of years and type): 3 years teaching experience

2. For outreach duties, specify the information being transferred and the audience: N/A

The following questions apply to the current academic year:

3. For teaching duties, specify whether: ☒ Credit ☐ Non-credit ☐ On-campus ☐ Off-campus
   If credit, specify course number and number of credits BS 161 & 162, BS 181H & 182H

4. For research duties, is the person in this position specified as the principal or co-principal investigator on a research grant or contract? ◉ Yes ○ No

PLACEMENT GUIDELINES (Use when listing duties and responsibilities on back of this form.)

1. TEACHING/ADVISING/CURRICULUM DEVELOPMENT

Teaching specialists provide instruction for credit courses. Teaching and related class preparation, grading, student evaluation, etc., are substantial and continuing dimensions of ongoing responsibilities (i.e., occupying at least 30% of the time). These specialists are the instructors of record or teach portions of courses on a regular basis entailing the time commitment referenced above. Occasional teaching assignments cannot satisfy assignment to this specialist category.

Advising specialists devote the preponderance of their time (50%+) to advising students on course selection, degree requirements, majors, etc., and/or to other instructional activities, e.g., tutoring, interpreting for students with disabilities or bilingual students, advising on academic developmental needs, and developing instructional strategies to assist academic progress. Advising may include career counseling, but this is incidental to the major focus of course and curriculum advice.

Curriculum development specialists provide content-related support to course, curriculum and/or instructional development activities. At least 30% of time must be devoted to these activities to satisfy assignment to this specialist category.

Beyond the assignments referenced above, time may be spent on research, administration, outreach, or other activities.

2. RESEARCH

Research specialists take a lead role on research projects, including developing grant proposals, and directing the research project with designation as principal investigator or performing position responsibilities which require a doctorate degree.

3. OUTREACH

Outreach specialists are responsible for disseminating the knowledge resources of the University to meet the knowledge needs of people outside the University.

Their work involves providing non-credit educational programs to off-campus students or client groups, including course development and presentation, and/or providing a linkage for those outside the University to identify and access faculty knowledge, resources, and research results. This can involve technology transfer which provides a linkage between external University publics and faculty research resources to help resolve complex technological issues and/or share technological or scientific knowledge. These duties must involve a time commitment of at least 30%.

In addition to these responsibilities, outreach specialists may be involved in proposal writing, resource identification, and data gathering. Outreach specialists also can be designated as principal investigators. They can be appointed through any college as part of the newly decentralized Lifelong Education program or through a college which has technological/research resources to share with the outside public.

DESCRIPTION OF DUTIES

Summarize the **primary** purpose of the position in a few sentences (i.e., why does the job exist?): This job is to develop curriculum for the basic biological science courses and to teach one or more sections of biological science courses.

List the duties and responsibilities of the position. Specify percentage of time devoted to each duty during the year and categorize each duty using this key: Tch = Teaching Credit Course; Adv = Advising; Cur = Curriculum Development; Rsc = Research; Out = Outreach Education or Technology Transfer; Oth = Other. Indicate particularly important duties and responsibilities by placing an asterisk (*) in the priority box. See front of form for placement guidelines.

EXAMPLES

	Tch	Adv	Cur	Rsc	Out	Oth	
#1 25 % Priority [*]				✓			*Serve as a principal investigator to conduct research in the area of composite materials fabrication.*
#2 30 % Priority ☐					✓		*Provide in-service education programming for teachers and staff throughout the state.*

	Tch	Adv	Cur	Rsc	Out	Oth	
#1 50 % Priority ☐			X				Curriculum development for sciences
#2 15 % Priority ☐	X						Teaching in basic biological sciences
#3 15 % Priority ☐						X	Coordinating implementation of curriculum reform.
#4 20 % Priority ☐				X			Research on the Scholarship of teaching and learning
#5 ____ % Priority ☐							

% TOTAL Tch 15 % Adv ____ % Cur 50 % Rsc 20 % Out ____ % Oth 15 %

USE ADDITIONAL PAGES IF NECESSARY

Name [redacted]

ACADEMIC ADVISING

4. Number of current advisees:

Freshmen	
Sophomores	
Juniors	
Seniors	
Other	

5. Service on graduate/professional student guidance committees:
(List number of students)

	Masters	Doctoral	Professional
Currently enrolled or active			
Degrees Awarded - total of career			

6. Provide a summary of accomplishments in academic advising (reference Academic Specialist Handbook - Appendix A: Functional Description of Specialist Duties, Advancement in the System and Administrative Responsibilities, section A.5.1.1).

Not Applicable

7. Evaluation of academic advising by unit administrator. Include advising, recruitment and retention of students; evidence of a leadership role in the advising profession; evidence of commitment to and effectiveness in promoting diversity and intellectual honesty; summary of evidence of recognition by students, peers, faculty and others within and outside MSU.

Not Applicable

Name [redacted]

TEACHING ACTIVITIES IN CREDIT COURSES

8. Record of teaching activities for the past three years*:

Term and Year	Course Number	Credits (#,var)	Type of Section (Lec,Rec, Lab,Pract)	# of Students	Type of Participation (Teach, teach as part of team, evaluate, demonstrate, assist teacher, etc.)
2014	BS161	3	Lecture	163	Teach
2015	BS161	3	Lecture	231	Teach
2016	BS161	3	Lecture	250	Teach

9. Provide a summary of accomplishments in teaching (reference Academic Specialist Handbook - Appendix A: Functional Description of Specialist Duties, Advancement in the System and Administrative Responsibilities, section A.5.1.2).

During the last three years Dr. [redacted] has been implementing in her BS161 courses the shared vision for BS161 developed by MSU's Biology Initiative. This vision states that the course should (1) develop students' conceptual understanding of Big Ideas in cell and molecular biology, (2) engage students in Science Practices, (3) engage students in activities and assignments that emphasize time-on-task and high expectations, and (4) create an inclusive learning environment that encourages faculty-student and student-student interaction.

Dr. [redacted] has developed and implemented active learning exercises that are aligned with these learning objectives. These exercises engage students in problem solving activities, mini-case studies, and worksheets focused on science practices and big ideas. For example, a target learning outcome is for students to be able to develop and use models to explain concepts and phenomena in cell and molecular biology. She has also used modeling exercises originally developed by Dr. [redacted], Curriculum Coordinator for BS161, and has created new exercises based on his model. GTAs and ULAs interact with the students during the modeling exercises to enhance learning. The student-generated models are electronically submitted and graded to provide students with formative feedback.

She is working to improve assessment of student learning in BS161 by creating assessment items that blend science practices and big ideas. Up to 40% of the points on the unit and final exams come from written assessment items, something that only became possible recently in BS161 with the infusion of Biology Initiative resources.

* In determining the "past three years" the candidate may elect to exclude any terms during which s/he was on leave.

Name [redacted]

MSU-SPONSORED NON-CREDIT INSTRUCTIONAL ACTIVITIES/SCHOLARLY PRESENTATIONS

10. Record of MSU-sponsored non-credit instructional activities for the past three years*:

Year	Type of Presentation (workshop, seminar, etc.)	# of Sessions per Year	Target Audience	# of Parti-cipants	Type of Participation (Instruct/present, instruct/ present as part of team, evaluate, demonstrate, etc.)
2014	Workshop	1	Faculty, acad staff	~30	Co-present STEM Teaching Essentials Workshop with [redacted] on MAPWorks
2014-Cur	Fellowship Prog.	8	STEM Faculty	9	Co-lead STEM Gateway Fellowship Program with [redacted]
2013-Cur	Workshops	3	Faculty, acad staff	50-70	STEM Alliance Workshops; develop and present as part of a team
2015	Retreat	1	Faculty, acad staff	33	HHMI Project STEM Gateway Summit; develop and present as part of a team
2015	LEAD Workshop		Faculty, Admin	~80	Develop and present as part of a team
2015	Workshop	1	Faculty, acad staff	~40	Present STEM Teaching Essentials Workshop on Backward Design
2014	Invited Talk	1	Faculty, Admin	~150	Co-lead with [redacted] AAU STEM Initiative Conference, Washington
2014	Conf Presentation	1	STEM Faculty	~35	Present at Transforming Institutions Undergrad STEM Education Conf, Indianapolis, IN
2015	Invited Panelist	1	Faculty, Admin	~150	Present and serve as panelist, AAU STEM Initiative Conference, Washington

11. Provide summary of accomplishments in instructional activities.

Successful and sustainable reform of STEM education is dependent on establishing an institutional culture in which teaching and learning are valued, recognized, and rewarded. Dr [redacted] instructional activities and scholarly presentations have been in service to that goal. Her efforts have largely centered on engaging faculty and academic staff in programs focused on improving STEM Education and increasing STEM student retention and success. Her presentations outside of MSU have focused on describing the approaches we are using at MSU to engage STEM faculty.

At MSU she has been a leader in development and implementation of the STEM Gateway Teaching Fellowship. The overarching goals of the Fellowship are to facilitate curricular reform and encourage cultural transformation. The program is part of the MSU's AAU-funded project, 'Creating a Coherent STEM Gateway' and is supported with funds from the Office of the Provost, the College of Natural Science, and Lyman Briggs College. In collaboration with [redacted], she has developed and delivered monthly workshops for the 9 Fellows in the inaugural cohort, and her team is preparing to recruit a second cohort of fellows this spring. This program is cultivating an expanding and highly visible community of faculty and academic staff committed to improving the STEM gateway curriculum. Additionally, she has worked with [redacted] and [redacted] to develop and deliver several STEM Education Alliance meetings and a 2-day retreat focused on improving the STEM gateway curriculum as part of MSU's HHMI LEVERS program. These overlapping efforts contribute to the overall goal to transform STEM Education at MSU.

* In determining the "past three years" the candidate may elect to exclude any terms during which s/he was on leave.

Name [redacted]

12. Evaluation of contributions to teaching and instructional activities by unit administrator. Include effectiveness of teaching; presentation of information; innovation and leadership in teaching/learning methods; evidence of promoting an appropriate climate of diversity and intellectual honesty in instructional settings; summary of evidence of recognition from students, peers, faculty, and others within and outside MSU.

[redacted]

Name [redacted]

CURRICULUM DEVELOPMENT

13. List significant contributions to planning and development of curricula, academic programs and courses (reference Academic Specialist Handbook - Appendix A: Functional Description of Specialist Duties, Advancement in the System and Administrative Responsibilities, section A.5.1.3).

Dr. [redacted] primary responsibility is to provide leadership and support for implementation of MSU's Biology Initiative. The overarching goals of the initiative are to improve the quality and efficacy of biology teaching and learning and to increase the retention and academic success of a diverse group of learners interested in the biological sciences. Her activities in support of those goals include:

Co-Chair: Biology Initiative Executive Committee & Chair: Biology Initiative Oversight Committee
- Led development of a shared vision for undergraduate biology education at MSU
- Identified and described a foundational curriculum for MSU's undergraduate biology education
- Proposed and hired course curriculum coordinators for BS161, BS162, and ZOL341
- Implemented reduction of section size of BS161
- Obtained extra TA support for implementation of active learning in BS161
- Developed a process for evaluation of teaching in BioSci
- Initiated effort to evaluate and improve Human Biology major.

Chair of Biology Initiative BS161 Course Committee
- Led meetings of the committee charged with evaluating and improving BS161
- Facilitated development of a shared vision for BS161
- Ensured that the BS161 vision emphasized student understanding of big ideas and science practices
- Organized, planned and led BS161 Curriculum Workshops for the community of instructors
- Continued development of instructional materials and common assessment items to be used across BS161 sections

Chair of Biology Initiative BS150 Committee
- Lead author on BS150 Committee Report describing need for alternative to BS161 for non-life-science majors
- Initiated development of IBIO150 `Integrating Biology, From DNA to Populations'

14. Evaluation of curriculum planning and development by unit administrator. Include professional contributions and evidence of leadership; commitment to and effectiveness in promoting diversity and intellectual honesty; summary of evidence of recognition of peers, faculty and others within and outside MSU.

[redacted]

PUBLICATIONS

15. List materials authored or co-authored in support of MSU advising, MSU credit or non-credit courses, or for use in MSU service/outreach activities. The list should be chronological order by category with the most recent work listed first. Include author(s), title, date, and target audience or course.

None.

16. List research publications, papers, and other creative works under headings of (1) Books; (2) Book Chapters; (3) Bulletins or Monographs; (4) Articles (**for multi-authored articles, indicate how the primary or lead author can be identified**); (5) Reviews; (6) Papers read/published in conference proceedings; (7) Invited papers; (8) Artistic endeavors (exhibits, showings, scores, performances, recordings, etc.); (9) Other scholarly and creative works and activities (video production, etc.). The list should be in chronological order by category with the most recent work listed first; asterisk monographs and articles which received peer review.

(4) Articles

[redacted] SM (lead author: Cooper). 2015. Challenge Faculty to Transform STEM Learning. Science 350: 281-2.*

[redacted] 2013. FAST-Future Academic Scholars in Teaching: A High-Engagement Development Program for Future STEM Faculty. Innovative Higher Education. 39(2): 1-15*

[redacted] 2013. The "Anti-Cookbook Laboratory": Converting "Canned" Introductory Biology Laboratories to Multi-week Independent Investigations. Tested Studies for Laboratory Teaching: Proceedings of the Association for Biology Laboratory Education. Volume 34

GRANTS

17. List grant and/or contract proposals authored/co-authored in last six years.* Each proposal should consist of a 2-line entry as described below. For Amount Funded, if the proposal has not been funded, type "pending" or "rejected" as appropriate.

Line 1: Title of the proposal
Line 2: Name of granting or contracting agency, date submitted, amount funded, principal/co-investigators (if not the candidate).

1. Creating a Coherent Gateway for STEM Teaching and Learning
American Association of Universitie;: PI: [redacted]; FUNDED for $250,000 over 3 years June 2013
- I am senior personnel and part of an interdisciplinary research team performing the research.

2. LEVERS: Leveraging Engagement and Vision to Encourage Retention in STEM,
Howard Hughes Medical Institute; PI: [redacted], FUNDED for $1.5 million over 5 years beginning September 2013
- I am senior personnel and responsible for administration, evaluation, dissemination.

RESEARCH

18. List significant contributions to research (reference Academic Specialist Handbook - Appendix A: Functional Description of Specialist Duties, Advancement in the System and Administrative Responsibilities, section A.5.2).

Dr. [redacted] is part of an interdisciplinary research group focused on improving STEM education across the gateway curriculum. Led by [redacted], MSU's AAU STEM Education Initiative research team has been at work developing a pair of instruments designed to assess changes over time in the content, instructional practices, and assessments used in gateway courses across disciplines. The Three-dimensional Learning Assessment Protocol (3D-LAP) characterizes the extent to which assessment items evaluate three-dimensional learning, that is, learning that blends disciplinary core ideas, science practices, and crosscutting concepts. Similarly, the Three-dimensional Learning Observation Protocol (3D-LOP) is designed to evaluate teaching practice by measuring to what extent a typical class meeting incorporates disciplinary core ideas, science practices, and crosscutting concepts. The instruments are not discipline-specific and can therefore provide a systematic and integrated understanding of course reform efforts. Moreover, this research aligns well with her other roles and responsibilities related to STEM education reform. Dr. [redacted] group will eventually use these instruments to measure change and evaluate and improve teaching across the gateway curriculum.

All members of the group are co-authors on multiple posters and presentations that have been delivered at disciplinary conferences in biology, chemistry, and physics, as well as at conferences focused on STEM education more broadly. The group recently published an Education Forum in Science magazine entitled "Challenge Faculty to Reform STEM Learning" and they will shortly submit a research article to PLOS ONE that describes the development and validation of the 3D-LAP instrument.

* The candidate may elect to extend the 6-year period by a length of time equal to the length of any leaves taken during the past 6 years and make a notation to this effect.

Name [redacted]

19. Evaluation by unit administrator of the contributions to research. Include research techniques; support of others in research endeavors; advancement of knowledge, public benefit, economic development; promotion of appropriate climate for creativity, diversity and intellectual honesty in the research setting; summary of evidence of recognition of peers, faculty and others within and outside MSU.

[redacted]

PUBLIC SERVICE/OUTREACH

20. List significant contributions in the area of public service/outreach (reference Academic Specialist Handbook - Appendix A: Functional Description of Specialist Duties, Advancement in the System and Administrative Responsibilities, section A.5.3).

Not applicable

21. Evaluation of public service/outreach activities by unit administrator. Include delivery of educational and technical information, expertise and services to individuals, business, industry, government, educational institutions or other organizations such as galleries, museums, libraries; evidence of leadership; promotion of an appropriate climate for diversity and intellectual honesty in service/outreach settings; a summary of evidence of recognition by clients, peers, faculty and others within and outside MSU.

Not Applicable

ADMINISTRATIVE ACTIVITIES

22. List significant contributions in the area of administration (reference Academic Specialist Handbook - Appendix A: Functional Description of Specialist Duties, Advancement in the System and Administrative Responsibilities, section A.6).

As part of the Biology Initiative, the College of Natural Science has developed a long-term organizational structure that will facilitate effective communication and cooperation between the 7 different units responsible for undergraduate biology education. The Executive Committee, comprised of the biology Chairs and Directors, Associate Dean [redacted], and Assistant Dean [redacted], share responsibility for and make collective decisions about biology curricula including the BioSci Program courses and other core biology courses that serve students across the college and the institution. Dr. [redacted] major administrative responsibilities involve implementing the decisions made by this group. For example, she works with the committee to identify the faculty who teach in the BioSci program. She also organizes and collects data for the new teaching evaluation process implemented for these instructors. This administrative work has increased transparency and improved communication across the units, outcomes that are necessary to achieve the broader goal to improve biology education across the college.

23. Evaluation of administrative activities by department chairperson/school director.

[redacted]

Name [redacted]

COMMITTEE SERVICE

24. Indicate significant committee service and contributions under the following headings: 1) Unit/department, 2) College, 3) University and 4) National/International.

1) Microbiology and Molecular Genetics Curriculum Committee

2) Biology Initiative Oversight Committee (Chair)
Biology Initiative Executive Committee (Co-Chair)
Biology Initiative BS161 Course Committee (Chair)
Biology Initiative BS150 Course Committee (Chair)
College of Natural Science Curriculum Committee (Member)

25. Participation in professional associations/organizations/committees/societies.

Name of Society/ Organization	Office & Committee Assignments	Meetings Attended (Year)	Check if on Program

Not Applicable

26. List other professional development activities including attendance at conferences, workshops and seminars, enrollment in a degree granting program, etc.

STEM Teaching Essentials Workshops Attended:
- January 2016: To Flip or Not to Flip: Two Examples of Flipped Undergraduate Science Classes
-October 2015: Model, Meet Classroom. Classroom, Meet Model: Introducing Model to the Classroom Using Technology
- September 2015: Don't Leave the Door Open: Best Practices for Avoiding Student Grievances
- April 2015: Race Matters
- February 2015: Modeling+Computation: Project-based Learning in Introductory Physics
-October 2014: What Ideas Should We Be Teaching, and How Can We Assess Whether Students Have Learned Them
- September 2014: Neurobiology of Learning and Application to Teaching Strategies

Conferences and Workshops Attended:
- November 2015: AAC&U Crossing Boundaries: Transforming STEM Education, Seattle
- June 2015: HHMI Constellation Studio A: Promoting Persistence and Success Workshop, Washington, D.C.
- June 2015: Science and Mathematics Teacher Imperative National Conference on STEM Education, New Orleans
- October 2014: Transforming Institutions: Undergraduate STE Education for the 21st Century, Indianapolis
- September 2014: Integration of Strategies that Support Undergraduate Education in STEM, Washington D.C.

27. List awards and/or honors received.

2013 MSU Excellence in Diversity Award, Individual Sustained Effort toward Excellence in Diversity

28. Summarize any other significant contributions which have not been covered elsewhere.

Not Applicable

29. Attach copies of internal letters of recommendation and letters of external peer review.