Biology
Program Review

MODESTO JUNIOR COLLEGE

June 2017

Modesto Junior College
Instructional Program Review

June 2017

Contents

Program Overview

Instructions

Supplemental information, links to previous reviews, and dashboards can be accessed from the review, please ensure your pop-up blocker is turned off, or use Ctrl-Click to bypass it.

Please review each question below, following the prompts and links given in the help text. Additional help, and a list of frequently asked questions is available on the **Program Review Instructions** page.

Program Overview

Please list program awards that are under this department according to the college catalog. Next to each program award listed;

- Please denote if it should be included here, or should be listed elsewhere.
- Answer yes or no, if the program has external regulations
- Additional lines, if needed, may be added by typing the tab key while in the last cell
- Any additional notes can be added in the box below the table

[addl help]

Program Awards	Include in Review (yes/no)	External Regulations (yes/no)
AS University Prep Biology	Yes	No

Program Activities and Accomplishments:

Extracurricular activities provided to students include the club Operation Green, dinner with visiting scientists and field trips to biology workshops at various institutions including U.C. Berkeley and Lawrence Livermore Lab. Each spring, biology students are recognized for their academic achievements at the Science Award Ceremony. Through partnerships with Modesto Area Partners in Science, the Great Valley Museum, Stanislaus County Office of Education, and Mac's Office of instruction, MJC's Biology Program conducts outreach to community members through lecture series, Science Olympiad, Earth Day, Wild Planet Day events, mentoring h.s. students, adventures in nature, and primary classroom visitation by traveling scientists. In the past year, MJC biologists established a new scientific theory on primate behavior in tropical rain forests of Panama, appearing in a journal of the Cambridge University Press. MJC biologists helped maintained bird populations and led restoration projects in the local natural landscapes. A new biology field study course, Biological Sciences of the Channel Islands, was approved.

Response and follow-up to previous program reviews

On the **Curricunet website**, please locate your department and the previous program review. After reviewing, please complete the following questions;

Briefly describe the activities and accomplishments of the department since the last program review.

> This program review update is less than 1 year following our previous program review. As such, there has not been sufficient time to collect data or to document progress at this time.

The Mission of Modesto Junior College

MJC is committed to transforming lives through programs and services informed by the latest scholarship of teaching and learning. We provide a dynamic, innovative, undergraduate educational environment for the ever-changing populations and workforce needs of our regional community. We facilitate lifelong learning through the development of intellect, creativity, character, and abilities that shape students into thoughtful, culturally aware, engaged citizens.

Provide a brief overview of the program and how it contributes to accomplishing the Mission of Modesto Junior College. (Overview Suggestions: How consistent is the program with the institutional mission, vision, core values and/or goals? How are aspects of the institutional mission addressed within the program? Is the program critical to the pursuit of the institutional mission?)

Overview of the Program

> MJC's Biology Program contains core curricula for professional tracks in medicine, environmental science, zoology, botany, and education, and it provides field studies and community outreach activities that help to foster an understanding and appreciation for the natural world. Field study courses emphasize the natural history of the Central Valley and neighboring regions, in addition to data collection in the field. Biology department staff and students are involved in a variety of community outreach activities including Modesto Area Partners in Science (M.A.P.S), Great Valley Museum events, and the Northern Regional Science Olympiad.

Student Achievement and Completion

College Goal for Student Achievement

Increase Scorecard Completion Rate for Degree and Transfer

The College has a primary aspirational goal of increasing the Completion rate from 43% to 53% on the **CCCCO Scorecard Completion Rate for Degree and Transfer [view] by 2022.** The completion rates in the Scorecard refers to the percentage of degree, certificate and/or transfer-seeking students tracked for six years who completed a **degree, certificate, or transfer-related outcomes (60 transfer units).**

As you answer the questions below, please consider how your program is helping the college complete this aspirational goal of increasing the MJC Degree, Certificate, and Transfer Completion rate by 10% on the CCCCO Scorecard by 2022.

Success

The following questions refer to data from the Department Success Rates Dashboard. Use the filters to examine both departmental and course level data. Charts will be included for the record by Research and Planning once the review is submitted.

Locate your department success rates on the **Success Rate Data Dashboard** and consider your department success rates trends over time, especially the last two years. Also, consider the data detailing the variance of success rate of courses across sections. Are these rates what you expected? Are there any large gaps? Is there anything surprising about the data? What do you see in the data?

Overall success rates for biology courses averaged 70% for Academic Year 2015-2016 (71% in Fall 2015 and 69% Spring 2016); success rates averaged 74% throughout the 2016-2017 Academic year. The overall fill rate ranged from 110% to 117 % during these two academic years. Biology courses with the highest number of sections are: Bio 101 Introduction to Biology (for biology majors) with a median success rate of 88%, Bio 111 General Biology (for transfer) with a median success rate of 72%, and Bio 116 Human Biology (for transfer) with a median success rate of 70%.

Since Fall 2012, overall success rates for biology courses have increased from 68% to 75% - surprisingly, this has occurred while there has been a steady increase in class sizes. Over the same period, average class fill rates have gone from 111% to 115%. **See Figure 1**

Figure 2 shows historic success rates for the Core courses for the Biology Program – Biology 101, Botany 101 and Zoology 101. This data suggests that students improve as they move through the program. The entry course is Biology 101, having an 85% success rate over time. The next course in the sequence is Botany 101 – showing a historic improvement to 88% over a the 5 year span. Zoology 101, the final course in the sequence shows students demonstrating a 93% success rate. The design of the program is that students will be successfully learning foundational skill and concepts in the earlier portion of the program, and that having mastered these skills, they will have greater opportunities for success as they progress through the sequence. The data suggests that this is occurring.

Census data show that Biology 101 (the first in the sequence of 3 courses, has a 5 year annual census average of 88 students per year. Zoology 101 (the final course in the sequence) shows a 5 year annual average census of 74 students per year. This suggests that while there is some attrition through the program (16%), that the loss of non-successful students is not significantly contributing to the increasing success rates as students progress through the sequence. See figures 3 and 4 below

Course Success

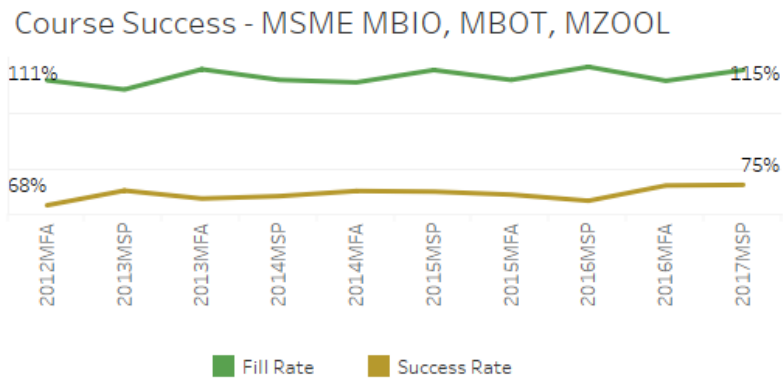
Division
MSME

Department
All

Terms
Multiple values

Online vs Face to Face
All

Filter to Course
Multiple values



Course Success and Fill

	Season	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Census	FALL	911	1,172	1,205	1,134	864
	SPRING	995	1,151	1,159	1,003	761
Capacity	FALL	818	1,017	1,089	1,017	777
	SPRING	920	1,032	1,008	864	662
Fill Rate	FALL	111%	115%	111%	112%	111%
	SPRING	108%	112%	115%	116%	115%
Successful	FALL	616	820	875	809	644
	SPRING	724	815	839	694	569
Success Rate	FALL	68%	70%	73%	71%	75%
	SPRING	73%	71%	72%	69%	75%

Course Success Rates for Selected Terms - Dots represent sections, box central distribution

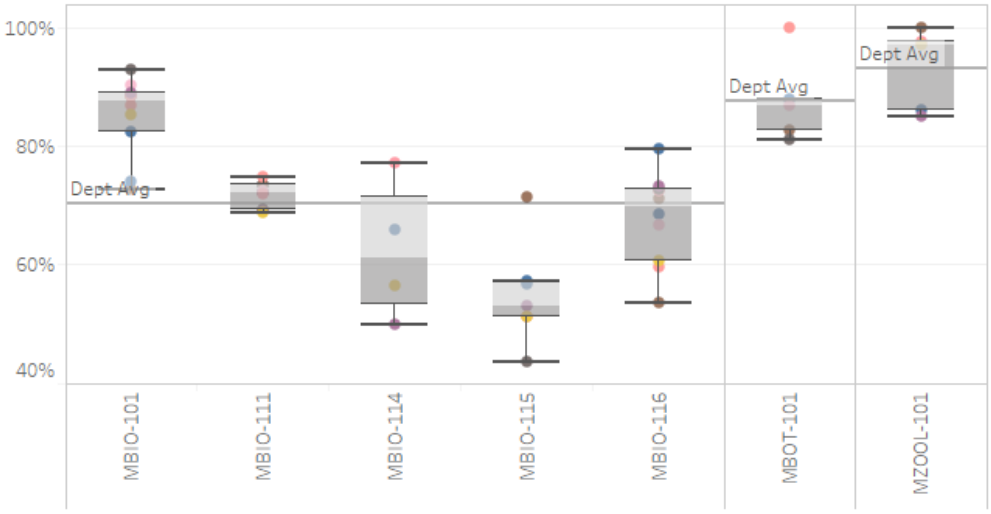
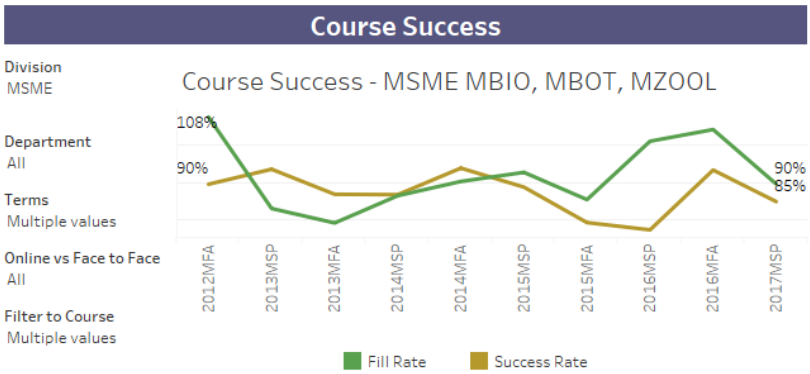


Figure 1: Overall success rates over time



Course Success and Fill

	Season	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Census	FALL	86	76	65	82	75
	SPRING	93	83	89	97	86
Capacity	FALL	80	96	72	96	72
	SPRING	112	96	96	96	96
Fill Rate	FALL	108%	79%	90%	85%	104%
	SPRING	83%	86%	93%	101%	90%
Successful	FALL	77	66	61	65	70
	SPRING	87	72	79	75	73
Success Rate	FALL	90%	87%	94%	79%	93%
	SPRING	94%	87%	89%	77%	85%

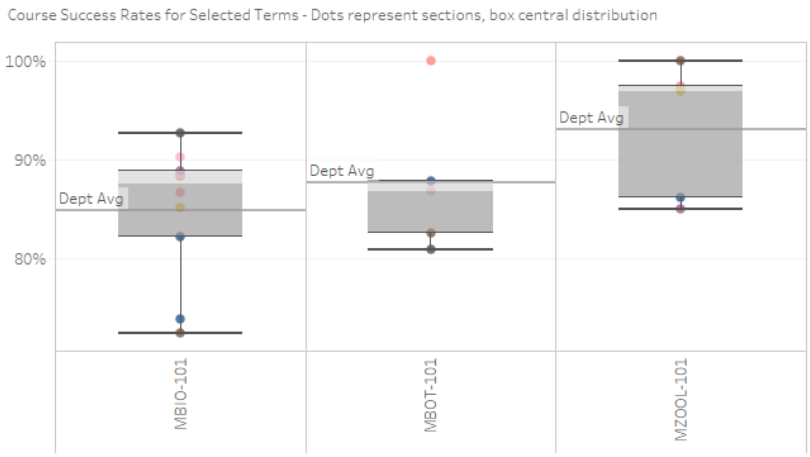


Figure 2: Historic success in Biology Major Core Courses [BIO 101, BOT 101, ZOO 101

Course Success and Fill

	Season	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Census	FALL	54	36	26	46	43
	SPRING	45	41	51	51	45
Capacity	FALL	56	48	24	48	48
	SPRING	56	48	48	48	48
Fill Rate	FALL	96%	75%	108%	96%	90%
	SPRING	80%	85%	106%	106%	94%
Successful	FALL	46	32	23	34	38
	SPRING	39	38	46	37	37
Success Rate	FALL	85%	89%	88%	74%	88%
	SPRING	87%	93%	90%	73%	82%

Figure 3: Historic Success Data for Biology 101

Course Success and Fill

	Season	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Census	FALL	32	40	39	36	32
Capacity	FALL	24	48	48	48	24
Fill Rate	FALL	133%	83%	81%	75%	133%
Successful	FALL	31	34	38	31	32
Success Rate	FALL	97%	85%	97%	86%	100%

Figure 4: Historic Success Data for Zoology 101

What is your set goal for success? Do your department and individual course rates meet this goal?

> The Biology Department will work towards having each course have an average success with a central distribution that encompasses the departmental average. Additionally, we will continue the teaching strategies now in practice that encourage and support student success of 70% or better in biology courses.

If your rates for success are lower than your goals, what are your plans to improve them?

> We will look into the demographics to gain an understanding of which students appear to be struggling the most to succeed. If there is demographic evidence indicating a potential focal population we will meet to discuss strategies that might have a positive effect on the given group. If there does not appear to be a demographic link to low success for courses that may need attention, we will meet as a department to review other relevant data that may reveal potential strategies for improvement.

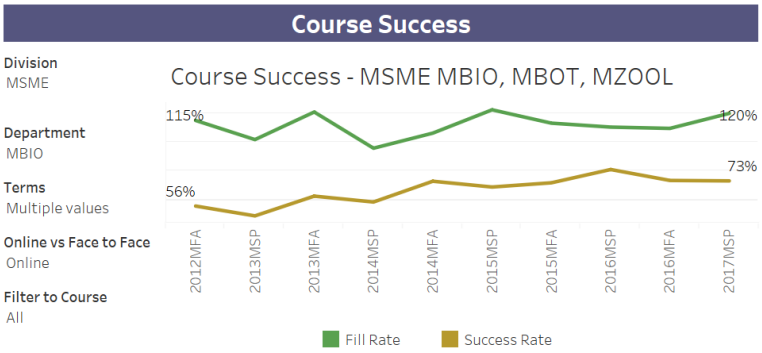
Locate your department equity rates on the **Success Rate Data Dashboard** (by pressing on the equity tab). Examine these rates, disaggregated by ethnicity and gender, over the last two years. If there are differences in success across groups, how do you plan on addressing issues of student equity? In other words, how do you plan on closing achievement gaps across student populations?

> In MJC biology courses, there is reasonable equity between male and female student success rates of 71.7% and 72.7% respectively. The greatest difference is observed in the number of students from different ethnicities completing biology courses. The highest numbers of students completing biology courses from Fall 2015 through Spring 2017 were Hispanic (1435) with a success rate of 69%; the next ethnic group by size was White (1046) with a success rate of 77%. Students that identified themselves as Native American comprised the smallest group of biology students (16) with a success rate of 80%; there were 65 biology students that identified themselves as black or African-American and had a success rate of 59%. Efforts to increase and retain students of ethnic groups that have low enrollment in biology

classes need to continue and improve. As a department, biology faculty are reviewing and sharing teaching methods that help make students of these ethnic groups feel welcome and comfortable in the classroom. In addition, efforts should continue to encourage these students to take advantage of office hours, study groups, college support services, and extra-curricular activities such as student clubs.

If distance education is offered, consider any gaps between distance education and face-to-face courses. Do these rates differ? If so, how do you plan on closing the achievement gaps between distance education and face-to-face courses?

Success in Online Biology courses is 65.1 % based on only 83 students. This is lower than face-to-face biology course success rates of 73% with 3896 students, but higher than the campus-wide success rate of 62.9% for online courses. Most of the MJC online biology courses are hybrids and the success rates of these students have been included in the face-to-face data. The biology hybrid courses should be separated out for separate analysis of their success rates. [See Online Success Data – **Figure 5** - Below. Departmental Success Data is presented above in **Figure 1**]



Course Success and Fill

	Season	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Census	FALL	161	145	204	353	299
	SPRING	57	138	323	159	247
Capacity	FALL	140	120	192	312	273
	SPRING	56	144	264	144	206
Fill Rate	FALL	115%	121%	106%	113%	110%
	SPRING	102%	96%	122%	110%	120%
Successful	FALL	90	91	149	254	220
	SPRING	28	81	223	129	181
Success Rate	FALL	56%	63%	73%	72%	74%
	SPRING	49%	59%	69%	81%	73%

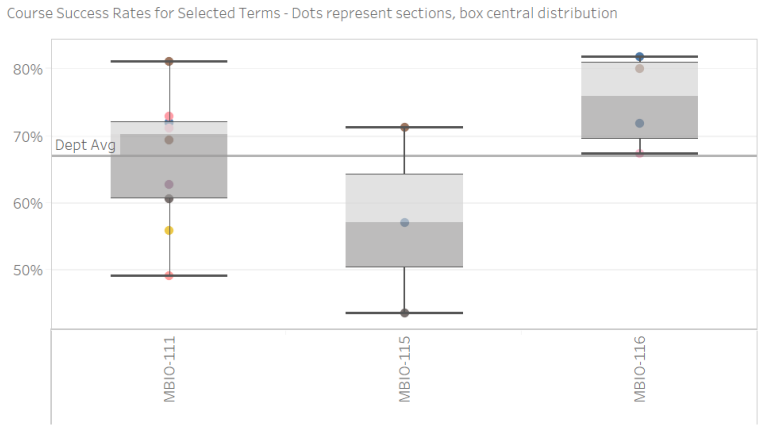


Figure 5: Historic Success for Online Courses

Conferred Award Trends

Review the **Program Awards Dashboard,** using the drop-down filters to focus the analysis on your department. Starting with identifying the year, please supply degrees and certificates awarded. These charts will be attached by Research and Planning before being posted publicly.

What is your set goal for degrees and certificates awarded? Do your rates meet this goal?

> The Biology Department offers an AS Degree in Biological Sciences. This A.S. is designed as a University Preparation, Emphasis in Biological Sciences. The University Preparation degree, distinctive of the University Preparation "pathway," is designed to prepare you for transfer to a California State University (CSU) or University of California (UC) campus.
>
> Over this review period, 25 degrees were conferred, 13 in 2015-2016 and 12 in 2016-2017. [**See Figure 7**]. Since 2011, 62 degrees have been conferred, with a low of 5 degrees in 2011-2012. There is a strong increasing trend, with the numbers in recent years more than doubling that observed in 2011-2012.
>
> Demographic data demonstrates that the greatest increase in the conferral of degrees is in the Hispanic Student Population. In 2011-2012 and 2012-2013 there were only 3 and 2 students (respectively) that earned the departmental AS Degree. Those numbers have nearly tripled in recent years, with 8 such students earning the award in 2016-2017. Over the same time period, there is a reversal in this trend observed in a student population identified as White. With this population there was a high of 8 students in 2012-2013 – this has decreased significantly in recent years, with only 1 student earning the AS degree in 2016-2017.
>
> The departmental goal is to investigate mechanisms to maintain this upward trend. This will include reviewing available demographic data, reviewing programmatic retention of students, and exploring opportunities for the department to better connect with local high school students that might consider opportunities in the Biological Sciences. Additional attention should be focused on identifying strategies to recapture student populations that have shown decreasing trends over time

If your rates for degrees and certificates awarded are lower than your goals, what are your plans to improve them?

> If the department is not able to maintain this increasing trend, the discussions and exploration described above will provide avenues to improvement.

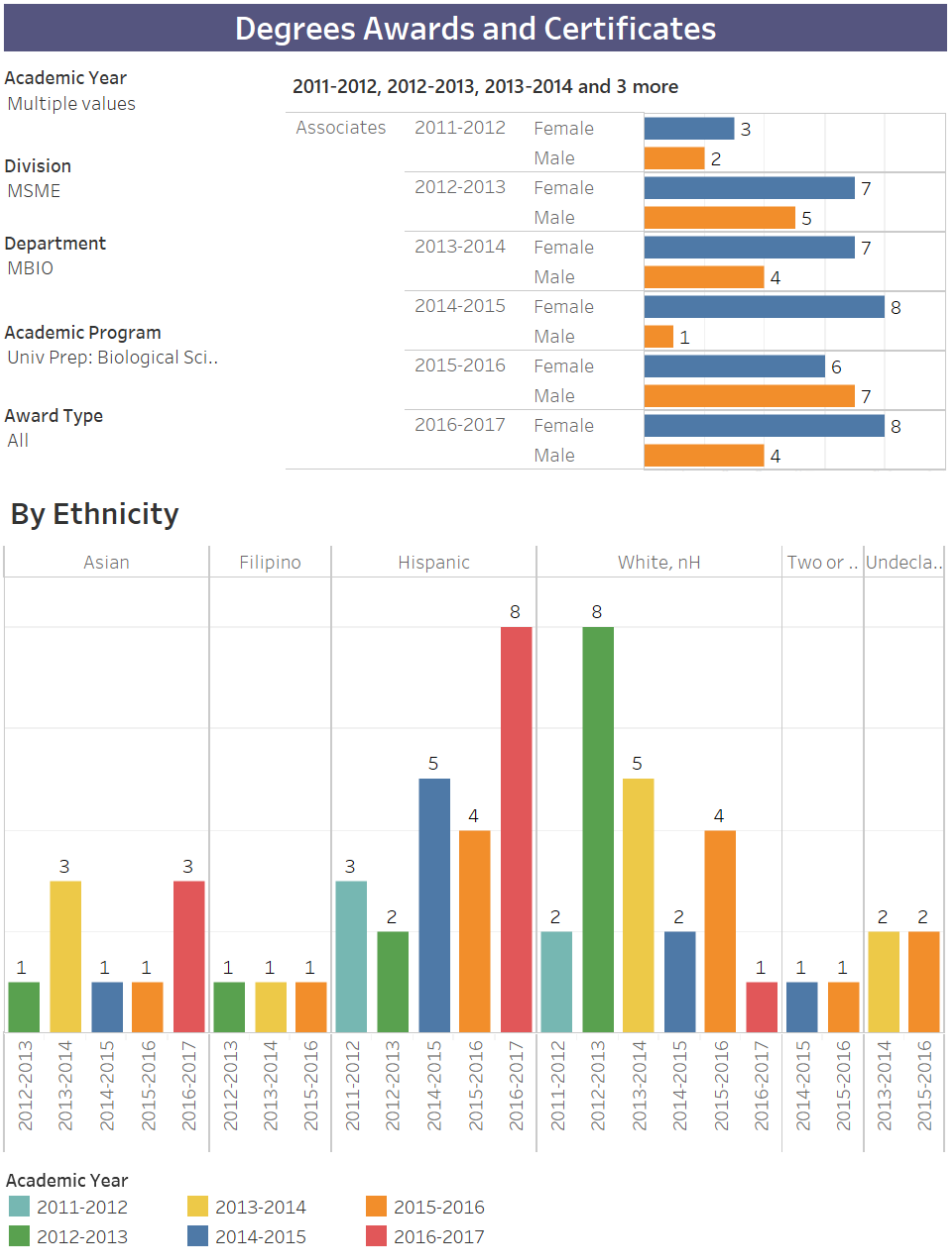


Figure 6: Historic Awards – Demographics

Degrees Awards and Certificates - Trended

Academic Year	Division ID	Department ID	Academic Program
Multiple values	MSME	MBIO	Univ Prep: Biological Sciences

Academic Program Awards, 2011-2012, 2012-2013, 2013-2014 and 3 more

Select Dept, Division, or Program, or use dropdown filters to focus charts.

			Associates	Total
MSME	Total		62	62
	MBIO	Total	62	62
		Univ Prep: Biological Sciences	62	62

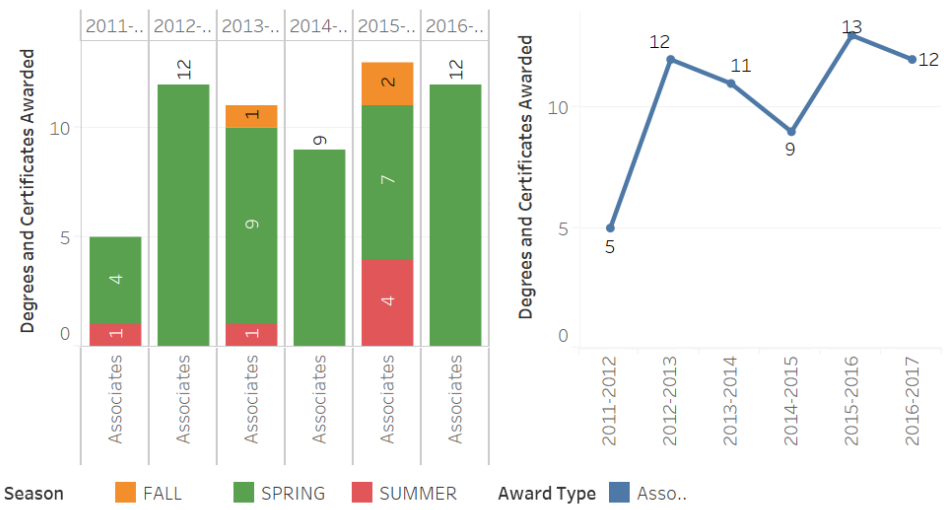


Figure 7: Historic Awards

Student Learning Outcomes

Instructions

This section of the Program Review measures student learning.

PLO / GELO / ILO Outcomes

To ease in analysis, trending charts have been created by Research and Planning on the **Learning Outcomes Dashboard** website. Using these charts, you can identify your current success rates in student achievement towards the outcomes. Considering your current outcome success rates, and previous semester, set a department aspirational goal, and examine what your outcome success rates are currently. Later you will be asked to outline a plan to achieve this threshold, but for now, simply supply the Goal % and Current % for each level.

Note: If the dashboards do not show your Learning Outcomes, please ensure that they have been mapped in eLumen. Each course will need to be mapped to each applicable PLO, GELO, and ILO. The Outcome Assessment Workgroup has created a web page detailing the work already done -> **PLO, ILO, and GELO Assessment grids.** For additional assistance, review **the Course Learning Outcome Assessment** web pages, or contact Nita Gopal at **gopaln@mjc.edu.**

Student Learning and Outcomes Assessment

Please review your Learning Outcomes data located on the **MJC Student Learning Outcomes Assessment** website and below, in regards to any applicable Program, Institutional, and General Education Learning Outcomes.

For each ILO that your course learning outcomes inform, you will find your overall rate. On the MJC Student Learning Outcomes Assessment website, you will also see that overall rate disaggregated across student populations; you can use this information to understand how different student populations are learning in your courses.

After you have examined your rates and disaggregated data, reflect on the data you encountered. Please address the program outcomes (PLO), general education outcomes GELO (if any), and institutional outcomes (ILO) in your analysis.

Program Learning Outcomes (PLO)
What is your set goal for PLO success? Do your overall rates meet this goal?

> Past success rates for Program Learning Outcomes for our core biology program have been greater than 90%. The Biology Department is dedicated to maintaining this student success. In addition, we are working to support higher success in our non-majors biology courses which hover around 70% success rate. In order to complete this current program review, faculty have "mapped" PLOs and are seeking to obtain data that has been recorded in eLumen. In addition, faculty continue to upload assessment data for all biology courses into eLumen. We have not been successful in completing these tasks in time for this program review, however, we continually assess student success and support continued and improved student success. The timeline for this Program Review given the new format and data analysis requirements has been difficult to meet. Biology Department faculty have worked collaboratively to make this a meaningful process. Other teaching tasks have required our time over the past few months. Biology faculty have focused on the transition from Blackboard to Canvas and recent switch to a new text for non-majors courses in order to successfully support students currently enrolled in biology courses. In addition, the biology faculty are very active in outreach activities, all of which require extra time for start up at the end of the new year. Given the demands of teaching, learning to utilize eLumen for use in the present Program Review has been difficult to achieve in the span of three weeks, however biology faculty will continue to work on this process.

Curriculum and Course Offerings Analysis

Curriculum Analysis

Courses that have not been reviewed, or not scheduled to be reviewed, are listed on the Curriculum Committee web pages. To aid in use, please view this filtered spreadsheet, using the drop down menus along the field headings, to view just your department. On opening the spreadsheet, click the Enable Editing and Enable content buttons that should appear across the top menu bar.

Considering those courses that have not been reviewed within the last five years, please address these below.

Provide your plans to bring courses into compliance with the 5-year cycle of review. If your department is compliant, please state that.

> The Biology Department has worked to update biology courses. At the present time, Bio 145 and Bio 50 are out of compliance.

Provide your plans to either inactivate or teach each course not taught in the last two years.

> Faculty plan to bring Bio 50 into compliance. Within the next couple of weeks we will evaluate whether to bring Bio 145 into compliance or inactivate this course.

Does the College Catalog accurately display the descriptions and requirements of all the courses and educational awards (degrees/certificates) overseen by this program? If not, please describe your plans to correct.

> Yes.

Are there plans for new courses or educational awards (degrees/certificates) in this program? If so, please describe the new course(s) or award(s) you intend to create.

> There are plans for new courses, especially in the area of biology field study courses. In addition, the future completion of the Outdoor Educational Area of the Science Community Center will likely provide additional opportunities and inspiration for a new biology course.

What needs or rationale support this action, and when do you expect to submit these items to the Curriculum Committee?

> The biology department views the biology field study courses as a way to recruit new students into biology courses and careers. New courses will be submitted to the Curriculum Committee over the next year.

Course Time, Location and Modality Analysis

Please follow this link and review the **Course Attributes** in regards to when, where, and in which method the courses in this program are taught. Use the filters to focus the report on your department. Then answer the following questions.

Location/Times/Modality Trend Analysis:
Consider and analyze your location, time, and modality trends. Discuss any program plans that address more efficient and beneficial location, modality and/or time of day trends.

Course Distribution and Fill Rates

Division	Department	Season	Academic Year	Component
MSME	(Multiple values)	(Multiple values)	(Multiple values)	Core

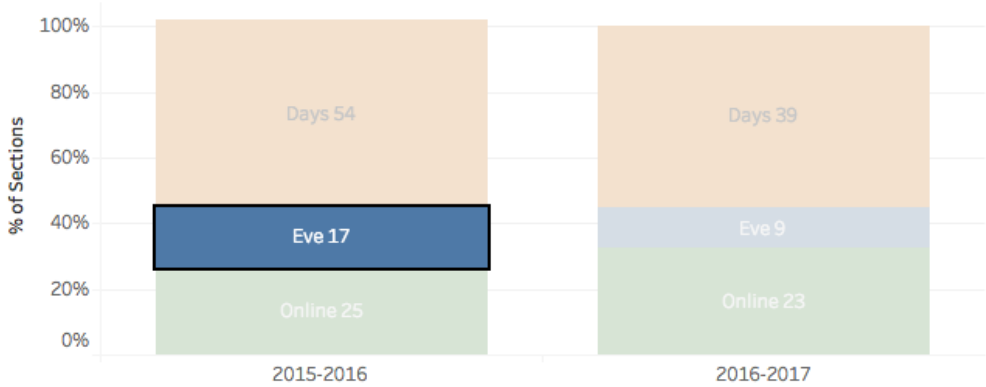
Section Distribution

Academic ..	Season	Days	Eve	Online
2015-2016	FALL	56%	16%	29%
	SPRING	61%	22%	17%
	SUMMER	47%	13%	40%
2016-2017	FALL	52%	15%	33%
	SPRING	56%	15%	30%
	SUMMER	64%		36%

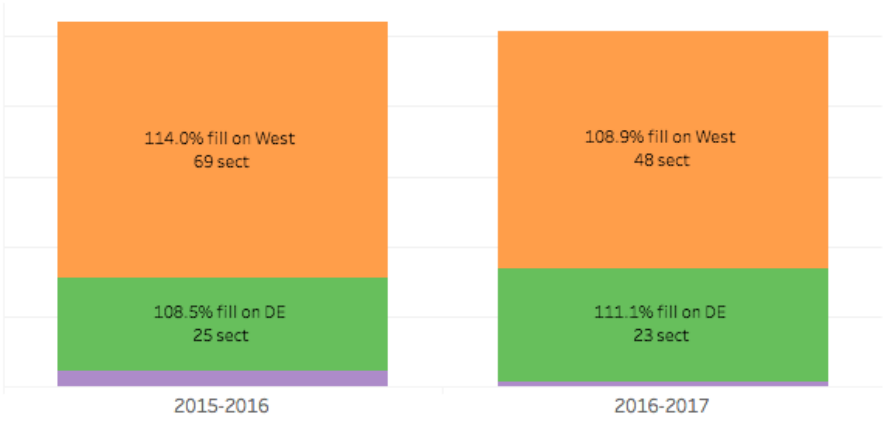
Fill Rate Distribution

Academic ..	Season	<80%	80-89%	90-99%	>100%
2015-2016	FALL	6.7%	6.7%	8.9%	77.8%
	SPRING		2.8%	2.8%	94.4%
	SUMMER	26.7%		13.3%	60.0%
2016-2017	FALL	3.0%	9.1%	3.0%	84.8%
	SPRING	3.7%	3.7%		92.6%
	SUMMER	18.2%	9.1%	36.4%	36.4%

Sections Offered by Time of Day



Sections by Location (Dual listed multiple)



In 2014-2015 the delivery of hybrid courses increased by 73% from the previous year. Hybrid and Online instruction helps to address critical needs of those students who work or have childcare responsibilities during regular course hours. Hybrid/Online courses made up 30% of biology course offerings during spring of 2017. Additionally,

hybrid course offerings help to free up needed classroom space during prime high-demand instructional hours.

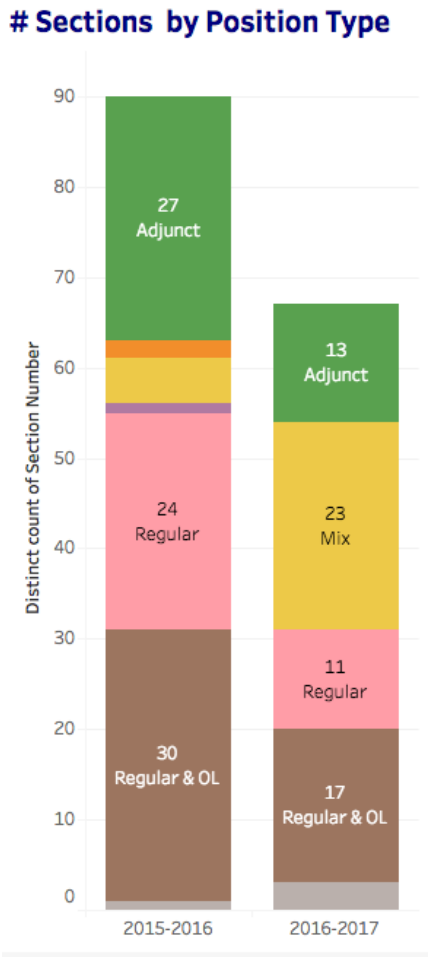
Program Analysis

Program Personnel

Please refer to the **Department Faculty and Sections Dashboard** to supply the names of faculty and adjuncts for the periods requested. Use the dashboard filters to focus on your individual department. Due to the complexity of payroll accounts and assignments, those listed may not match known individuals, please note any discrepancies.

Additional comments or narrative can be added below.

Faculty Name	Full-Time or Part-Time (adjunct)
Curtis, Teri J	Both
Gervin, Dennis	Both
Greene, Catherine	Both
Lucas, Erynn	Full-time
Madden, Derek	Both
McInnes, Elizabeth	Both
Monlux, Michele	Full-time
Nash, Holly	Full-time
Zermeno, Joe	Both
Basey, Glenn	Part-time
Cross, Jill	Part-time
Fong, Micheal	Part-time
Heyne, Timothy	Part-time
Lee, Eric	Part-time
Lytle, Jonathan	Part-time
McDonald, Jennifer	Part-time
Snyder, Cathy	Part-time



http://www.mjc.edu/instruction/outcomesassessment/programreview/prdashboard/faculty_sections.php

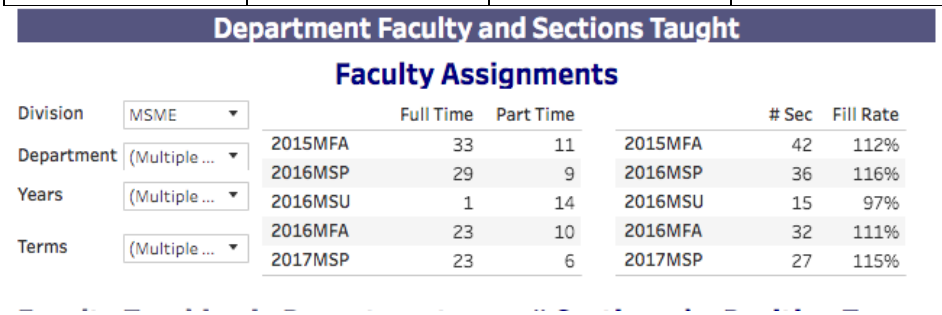
Faculty Assignments

Please refer to the **Department Faculty and Sections Dashboard** to supply the number of faculty and adjuncts for the past two years of regular terms. Use the dashboard filters to focus on your individual department. Due to the complexity of payroll accounts and assignments, those listed may not match known individuals, please note any discrepancies. Please note that summer positions are all shown as adjunct due to payroll categories.

Enter figures for each term, to add additional rows, click in last cell on right and push tab on the keyboard.

Additional comments or narrative can be added below.

Term (Year Term, e.g. 2016)	# Sections Offered / Term	# Taught by FT Faculty	# Taught by Other Faculty	Program Fill Rate %
2015 MFA	42	33	11	112%
2016MSP	36	29	9	116%
2016MSU	15	1	14	97%
2016MFA	32	23	10	111%
2017MSP	27	23	6	115%



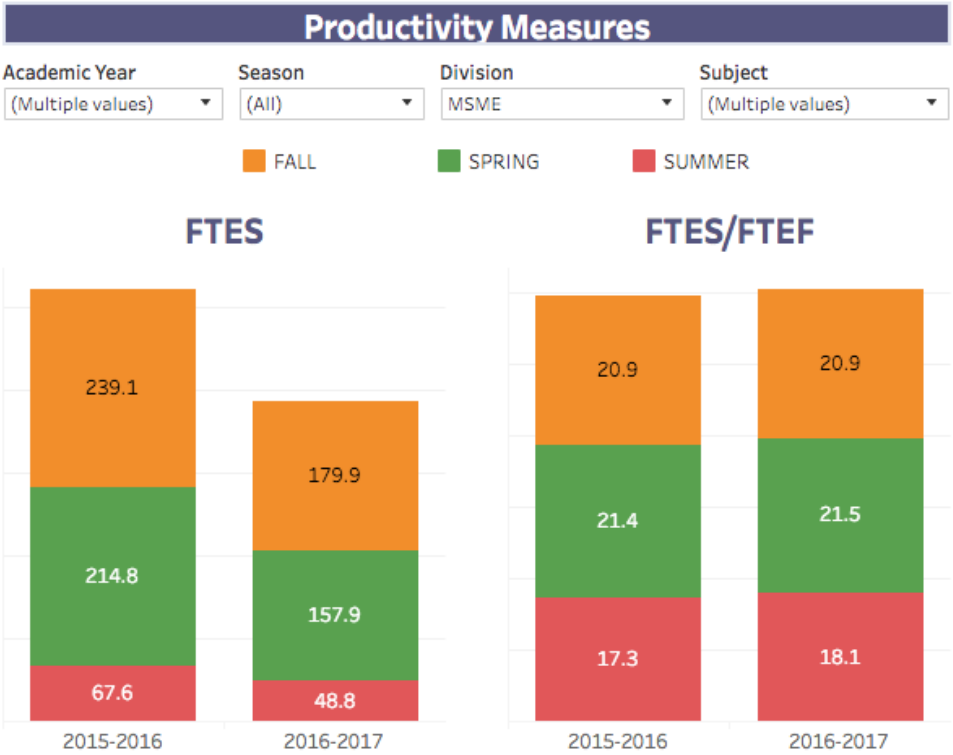
- Includes BIO, BOT, ZOO

Departmental Productivity Measurements

If not pre-filled, please complete for **two years** the following table of indicators, as listed on top of the **Productivity Dashboard**. A picture of this dashboard will be supplied by Research and Planning. Please enter one term per line; to add an additional line, click in last cell and use the Tab key.

The space below is available for comments and narratives.

Term (e.g. 2016 Fall)	FTEF	FTES	FTES/FTEF	WSCH/FTEF
2015 MFA	11.46	239.05	20.85	625.61
2016MSP	10.03	214.80	21.41	642.27
2016MSU	3.92	67.64	17.27	518.06
2016MFA	8.59	179.87	20.93	627.95
2017MSP	7.35	157.88	21.47	644.14
2017MSU	2.70	48.80	18.07	542.24



Department Productivity
MSME division, MBIO, MBOT, MZOOL department

Long Term Planning and Resource Needs

Long Term Planning

Provide any additional information that hasn't been addressed elsewhere in this program review, such as environmental scans for opportunities or threats to your program, or an analysis of important subgroups of the college population you serve.

View the **Program Review Instructions** page for reference and inspiration.

Taking into account the trends within this program and the college, describe what you realistically believe your program will look like in three to five years, including such things as staffing, facilities, enrollments, breadth and locations of offerings, etc.

> The Biology Department expects steady, gradual growth of student enrollment with the expansion of course offerings; current faculty and staff will continue to be needed, and eventually expanded. With the completion of the Outdoor Education Area of the Science Community Center, additional technical staff support will be needed to assist with the maintenance of this new SME facility.

Resource Request and Action Plan

Priority	Name	Resource Type	Estimated Cost	Objective
high	Technical Support for Outdoor Education Area	Staff	increase of technician contracts $10,000 annually	To provide ongoing assistance for the maintenance of the Outdoor Area.
high	Augmentation of science supplies, including prepared microscope slides, biotechnology kits	Equipment	$ 20,000 annually	These items are required for biology courses each semester.
Medium	Biotechnology supplies including electrophoresis equipment, spectrophotometers	Equipment	$8,000	required component of biology lecture & lab curriculum
Medium	Field Equipment including: rubber boots, hand lenses, insect nets, field guides, etc.	Equipment	$800	regularly used in field experiences of various biology courses
high	Microscope maintenance	Equipment	$10,000	microscopes get heavy use in all biology courses
high	Spotting scope & tripod	Equipment	$2300	high quality spotting scope would improve observation activities for biology courses, especially Zoo 101, Bio 140, and Biology Field Study courses.
Medium	Two sets of full size hominid skulls, Mammalian Skull replacement.	Equipment		required component of biology lab curriculum

high	Light Meter for two	Equipment	$ 700	Analysis of light for photosynthesis from various light sources
Medium	Two Moticam X Advanced 1.3 Megapixel Microscope wireless WiFi Camera	Equipment	$1000	Data sharing, allows students to easily access digital images of specimens observed in lab
Medium	Botanical Models – replacement: Gymnosperm cones, Marchantia, Horsetail, fungi, root longitudinal, chloroplast	Equipment	$2000	Used during lab instruction to better understand plant anatomy, physiology and diversity of species
High	Greenhouse – plant specimens, soils, trays, planters, hydroponic equipment, etc.	Equipment	$10,000	Used during lab instruction to better understand plant anatomy, physiology and diversity of species
Medium	Jepson Manual – 12th edition class set – Botany 12 – 15 copies	Reference Materials	$150 each	Our current set is from 1992. Updated 12th edition is more accurate and reflects changes in taxonomy due to DNA analysis of numerous species. These manuals are used during lab for plant identification.
Medium	Borror & Delong's Introduciton to the Study of Insects 12 to 15 copies	Reference Materials	$150 each	We currently have 12 copies available for students enrolled in two sections of Zoology to share. These manuals are needed for developing the scientific skill of insect identification.

Evaluation of Previous Resource Allocations

Below is a list of resource allocations received in previous Program Reviews. Please evaluate the effectiveness of the resources utilized for your program. How did these resources help student success and completion? (https://www.mjc.edu/governance/rac/documents/ielmallocationsummary20142015.pdf)

The Evaluation / Measured Effectiveness can be typed in another program and pasted here, or typed directly in to the box below. The box will expand with additional text, and paragraphs (hard returns) can be added by using Ctrl+Enter.

Resource Allocated	PR Year	Evaluation / Measured Effectiveness
Biotechnology equipment, Microscope maintenance		Evaluation and use of new biotech equipment has just begun. Microscope maintenance was helpful, but funds were inadequate to address all microscope problems.

Appendix

Optional Questions

Please consider providing answers to the following questions. While these are optional, they provide crucial information about your equity efforts, training, classified professional support, and recruitment.

What strategies do you use to recruit, support and retain students from disproportionately impacted groups?

We have numerous outreach activities and actively involve students from different ethnic backgrounds. We also seek to inspire these students with science programs, such as MAPS, and field trips to biology workshops at surrounding science institutions.

Review Process Feedback

Please share any recommendations for improvements in the Program Review process, analysis, and questions. Your comments will become part of the permanent review record.

It would be extremely helpful in the future to be allowed more time to analyze data, discuss that data with our colleagues and complete this review process.

Executive Summary

Provide an executive summary of the findings of this program review. Your audience will be your Division Program Review Group, the MJC Program Review Workgroup, and the various councils of MJC.