Board 102: Design and Development HyFlex Courses for Undergraduate Students

Dr. Kazi Imran, SUNY Poly (DO NOT USE; MERGED INTO SUNY POLY INST (ENG & ENG TECH)

Kazi Imran earned his PhD. in Mechanical Engineering from North Carolina A&T State University. He is currently Assistant Professor at the State University of New York Polytechnic Institute (SUNY Poly). He received his bachelor's degree in Mechanical Engineering from Bangladesh University of Engineering and Technology (BUET). He has several years of academic experience at different universities, with positions ranging from research assistant to assistant professor. Prior to joining the State University of New York Polytechnic Institute team, Dr. Imran worked as Assistant Professor at the New York City College of Technology, CUNY. He also has more than 5 years of industrial experience in thermal power plant and HVAC system. Dr. Imran's research focused on design, analysis, manufacturing, characterization of advanced multifunctional composites and nanocomposite materials. His teaching expertise includes in the area of Solid Mechanics, Machine Design, Advanced Computer Aided Manufacturing (CAD/CAM/CNC), Finite Element Analysis (FEA), Advanced Solid Modeling (AutoCAD, SolidWorks), Thermodynamics, Material Science and Failure Analysis.

Dr. Jiayue Shen, SUNY Polytechnic Institute

Dr. Jiayue Shen received her Ph.D. degree in Mechanical Engineering from Old Dominion University, U.S., in 2018. In the same year, she joined the engineering technology department at SUNY Polytechnic Institute as an Assistant Professor. Since 2012, she has taught various courses in electronics, electrical control, mechatronics, material science, mechanical components, thermodynamics, static and senior capstone course, etc. Her main research interests are flexible electronics, sensor application, micromechanics, and wireless sensor technology. She also devotes her interests to STEM education. She published a couple of journal papers and conference proceedings and served as a reviewers/conference committee for different journals and international conferences in her research field.

Design and Development HyFlex Courses for Undergraduate Students

Kazi Imran and Jiayue Shen, State University of New York Polytechnic Institute

100 Seymour Road, Utica, NY 13502

Email: imrank@sunypoly.edu

HyFlex teaching is different from traditional face to face interaction. In the HyFlex modality student can join in the class in-person, online (synchronous) or can go through lecture notes and video in their convenient time schedule to meet the course goals and objectives. For online participants most of the communication involved through nonverbal methods like discussion forum, power point presentation, email and recorded video lecture. Adequate digital literacy knowledge is mandatory for students and faculty. Students should be self-motivated to be a successful learner. Through online discussions forum students will get more opportunity to discuss and will get more time to think/research about a topic. It is obvious students will expect that they will receive at least same or equivalent knowledge through online compare to face to face interaction. The purpose of this study is to addressed the issues related with HyFlex teaching such as i) Technologies requirement to teach HyFlex course effectively ii) Benefit and challenges involved in a HyFlex modality iii) How online students can get equal learning environment like traditional in-person students.

Keywords: HyFlex Course, Course Design

Introduction

HyFlex teaching methodology provides flexible opportunities to students to participate in-person, synchronous online and asynchronous online simultaneously. In this study authors explored methodology to enhance students learning, required technologies to teach effectively and benefit and challenges involved in a HyFlex modality. A typical HyFlex classroom consists of

three modes of modality: i) traditional in-person mode ii) synchronous online mode and iii) asynchronous online mode. For traditional in-person learning additional technologies or hardware are not required for students. However, for both online synchronous and asynchronous ~~online~~ modes computer and reliable internet access is necessary. For online synchronous mode student needs microphone and video camera in addition with computer for effective communication. Students have freedom to choose any learning modality and allowed to change the modality choice from session to session. Tetsuro Kakeshita [1] clarify the characteristics of various types of course delivery methods. Traditional in-person course: communication occur inside a classroom as well as outside of class as a formal or informal way which play a key role to develop relationship with students. Online synchronous course is the live streaming the class lecture using online conference tool like Zoom, Blackboard collaborate etc. This reduces the use of costly institutional infrastructure as well as reduce transportation time and cost for instructor and students. On-demand course or asynchronous course: instructor creates lecture notes, video and other course materials and upload these in a learning platform like Blackboard, D2L etc. Students can't ask and answer question in real time however, they can communicate with instructor or other students through email, chat or online discussion forum. Hybrid course: it is a combination of in-person and online course however, both modalities are not offer at the same time. If first lecture is in-person mode, student allowed to join only in-person. If second lecture is online synchronous mode, student allowed to join only online. HyFlex course provides flexible opportunities to participate in-person, online synchronous and online asynchronous simultaneously.

As long as student demographics of higher education continue to change, the challenges to accommodate diverse learners also will exits. HyFlex course provides opportunities to serve diverse group of students by combining different modalities rather than creating separate sections

[2]. Diane Wright [3] performed a case study on adult and career education course. In this study author found adult learners needs flexible learning environment to balance work, study, personal life and other commitment. HyFlex course development encourage and motivate students to perform their task when they able to do. Well-developed HyFlex courses ensure student choice, active approach of learning and higher level of class satisfaction. Blankson et al. [4] conduct a study regarding student choice and level of satisfaction in HyFlex course. From the given opportunity of different modalities, student selected option based on flexibility, learning style and their needs. Combination of in-person and virtual environment creates more options for students to allow more learning opportunities. However, implementation of HyFlex course need to be match with fundamental characteristics of different courses [5]. Revision and modification need to be made accordingly. For design and developing a new HyFlex course few points needs to consider such as design process, technology requirement, pedagogical strategy, assessment procedure, implementation and readiness of the students [6]. Well-designed HyFlex courses are ones in which all students have relationships with each other as well as with instructor. HyFlex course is a promising model for enhancing student engagement in the different level of education as well as different class sizes [7]. Physical space limitations and increasing student enrollment forced the educational institution to think and develop alternative learning platforms. HyFlex course design is one of the possible alternative delivery methods to balance the student's requirement with utilizing limited space and resources [8]. Abdelmalek and El Kharga [9] conduct a study about learning opportunities for graduate students in HyFlex courses. Their study showed that HyFlex course is a good delivery method to address students needs and provides students control over their learning.

This paper focuses on in-person and online learning systems at SUNY Polytechnic Institute and technology required to create HyFlex learning environment. The purpose of this study is to addressed issue related with HyFlex teaching such as i) Technologies required to teach HyFlex course effectively ii) Benefit and challenges involved in a HyFlex modality iii) How online students can get equal learning environment like traditional in-person students.

HyFlex Course Design

Finite Element Applications (MTC 476) is an undergraduate elective course for senior student at mechanical engineering technology (MTC) department at SUNY Polytechnic Institute. This senior level elective course was redesigned as a HyFlex course. Previously this course was offered in-person on campus modality and involved 2.5 hours lecture and 1.5 hours lab work each week. This course is designed to assist engineering students to the field of finite element modeling to gain a clear understanding of the basic concepts. Theoretical aspects of Finite Element Applications (FEA) as well as some practical aspects of modeling was covered. In each chapter, the relevant basic theory was discussed first and then demonstrate using simple problems with hand calculations. These problems are followed by examples that was solved using ANSYS. It is obvious students will expect that they will receive at least same or equivalent knowledge through online compare to face to face interaction. For this reason, clear and specific learning objectives needs to be set. Also, short-term plan and long-term goal of the course need to set very beginning. Then need to develop a methodology how effective it is possible to deliver in online system. After establishing specific learning objectives of the course, need to determine evidence students really achieve the goal or objective of the course. Student should have clear vision of understanding what exactly they need to do to show as proof that they achieved the goal or on the way to achieve goal. For evidence, homework, quiz, project, midterm and final exam are the tools to evaluate students.

Evaluation criteria or contents need to be almost same for all modalities. Table 1 summarizes HyFlex student attendance pattern for class size of 20 students. From the table it is clear majority of the student prefer to attend in-person although online participations allowed more flexibilities. This may be happed due to nature of course.

Enhance Students Learning in HyFlex Environment

Students and instructor need to work together to create effective HyFlex environment. To prepare students for these modalities instructor should provide clear instructions about student responsibilities and expectations from HyFlex courses. Asynchronous modality students should have asynchronous relationship with in-person or online synchronous modality students. Similarly, in-person students and synchronous online students should build relationship with other modality group of students. Group assignments with other modalities can help to build this relationship. Online discussion forum with course related topics can further enhance this relationship. Students can build relationship with instructor through attending class or office hours using any modality. Well-designed HyFlex courses are ones in which all students have relationships with each other as well as with instructor.

Technologies Required to teach HyFlex Course Effectively

Technological support for both faculty and students is essential to operate a successful HyFlex course. Dedicated HyFlex classrooms are very effective to deliver lectures. It can eliminate possible interruption during teaching as HyFlex classroom have well established technologies. Setting up portable camera and microphone system may take some extra time to be ready for lecture. If HyFlex room is not available instructor should have accessed the classroom prior to the class to make sure technology meet the requirement and ready to start the class.

Benefit in a HyFlex Modality

Most important benefit of HyFlex course is flexibility to participate class. Students are allowed to attend online or traditional in-person classroom. At same time instructor can engage students only online synchronous or only online asynchronous mode of lecture to better fit on instructor's official or personal schedule. HyFlex course also provides equitable environment for student learning with wide range variations in terms of occupation, physical and mental health, and family obligation. HyFlex course provides students opportunities to choose wide range of learning preferences. Student who are already in a full-time job can join class online synchronously or asynchronously. Student who are like social gathering and more hands-on experience can join traditional in-person. Students who are self-motivated or prefer more self-pace or freedom can join asynchronously. Table 2C summarizes some benefits involved of a HyFlex courses from student survey. One student mentioned "*I was able to attend class from home, even if I was sick or had to stay home for some reason I could still attend class."* Another student points on flexible options *"It provided me with the option to still attend class but at home instead of commuting".* Another student mentioned *"It allowed me to catch up on the material if I couldn't attend the inspersion course"*

Challenges in a HyFlex Modality

One of the important challenges for HyFlex course is the technological issues which is key component of HyFlex class. Portable devices like laptop, camera, microphone which are used to delivery lecture may need to keep updated with current technologies or may need repair. Converting the classroom as HyFlex class compatible is expensive as well as time consuming. Existing HyFlex classroom always need to be updated with technology with help of technical support. Instructor student interaction play a key role to develop interpersonal relationship with

students. This relationship encourages students to be more cooperative with others. HyFlex environment limiting interaction between instructor to students as well as student to students. Student evaluation is another challenge in HyFlex course. Exam questions need to prepare which are acceptable for all modalities. Single set of test questions may not work for all the modalities as online synchronous students will get access more accessible resources. Creating different sets of test question are time consuming and may not evaluate students' performance equally. Table 2 summarizes some challenges of HyFlex courses from student survey. One student mentioned "*Not as easy to learn as in person but is still helpful option."* Another student points on technological setup from student side "*Took time away from class. Sometimes it would take 10 minutes to get set up.".* Another student mentioned *"When writing on the actual whiteboard in class, it was difficult to see."*

Future Recommendation

For design and development of a HyFlex course instructor needs to focus on online asynchronous modality first. Then the course designed for online synchronous students need to adapt for online synchronous module and as well as for traditional in-person format. This will create equal and equitable learning platform for all types of students. Design based on in-person modality may not work for other two modalities especially online asynchronous environment. Dedicated HyFlex classroom should be used to teach HyFlex course to avoid technological or other issue.

Conclusions

HyFlex teaching methodology provides flexible opportunities to students to participate in-person, synchronous online and asynchronous online simultaneously. For design and development of a HyFlex course instructor needs to focus online asynchronous modality first. Then the course

designed for online asynchronous students need to adapt for online synchronous module and as well as for traditional in-person format. Students and instructor need to work together to create effective HyFlex environment. One of the important challenges for HyFlex course is the technological issues which is key component of HyFlex class. HyFlex course also provides equitable environment for student learning with wide range variations in terms of occupation, physical and mental health, and family obligation.

Table 1 HyFlex Student Attendance Pattern

	Week															
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Student 1	C	C	C	C	C	C	N	C	A	A	A	C	A	C	C	C
Student 2	C	C	C	C	C	C	C	C	C	C	C	C	A	C	A	A
Student 3	C	C	C	C	C	C	C	C	C	C	C	C	A	A	C	A
Student 4	N	S	C	C	C	C	A	C	C	C	C	C	C	C	S	A
Student 5	N	C	A	A	C	C	C	C	C	C	C	C	C	C	C	A
Student 6	C	C	C	C	C	C	C	C	C	C	C	C	A	A	C	A
Student 7	C	C	C	C	C	C	C	C	C	C	C	C	A	C	A	A
Student 8	C	S	C	C	C	C	N	C	A	C	C	A	A	A	A	A
Student 9	C	C	C	C	C	C	C	C	C	C	C	C	S	C	C	A
Student 10	C	C	C	C	C	C	C	C	C	C	C	C	A	C	C	A
Student 11	S	C	C	C	S	C	C	C	S	C	S	S	S	S	S	A
Student 12	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	A
Student 13	N	S	A	S	N	S	N	N	N	N	N	N	N	N	N	N
Student 14	C	C	C	C	C	C	N	C	C	S	C	S	A	S	C	A
Student 15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	A
Student 16	S	S	S	S	A	S	S	A	S	S	A	N	A	A	A	A
Student 17	C	A	N	C	C	C	C	C	C	C	C	C	A	C	C	A
Student 18	C	C	C	C	C	C	C	C	C	C	S	C	A	C	C	C
Student 19	C	C	C	C	C	C	C	C	C	C	C	C	C	A	C	A
Student 20	C	C	C	C	C	C	C	C	C	C	C	C	S	A	C	A
# Classroom	15	15	16	17	17	18	14	18	15	16	15	15	5	11	13	2
# Synchronous	2	4	1	2	1	2	1	0	2	2	2	2	3	2	2	0
# Asynchronous	0	1	2	1	1	0	1	1	2	1	2	1	11	6	4	17
# Nonattendance	3	0	1	0	1	0	4	1	1	1	1	2	1	1	1	1

C: Attended in the classroom
S: Attended synchronously online
A: Attended asynchronously
N: Did not attended

Table 2A HyFlex Student Survey Summary

Student #	Did you know that this is a HyFlex course	What video conference tool did your instructor use to teach this course?	I was provided adequate instructions on how to use the tool.	The technology tool was easy to use.	The technology tool helped me interact with my instructor.
1	Yes	Zoom	Unsure/Neutral	Unsure/Neutral	Unsure/Neutral
2	Yes	Don't Know/Unsure	Strongly Agree	Strongly Agree	Strongly Agree
3	Yes	Zoom	Strongly Agree	Agree	Unsure/Neutral
4	Yes	Zoom	Agree	Agree	Agree
5	Yes	Don't Know/Unsure	Agree	Agree	Agree
6	Yes	Zoom	Agree	Agree	Agree
7	Yes	Zoom	Strongly Agree	Strongly Agree	Agree
8	Yes	Zoom	Strongly Agree	Agree	Strongly Agree
9	Yes	Zoom	Strongly Agree	Strongly Agree	Strongly Agree
10	Yes	Zoom	Strongly Agree	Strongly Agree	Strongly Agree
11	Yes	Zoom	Strongly Agree	Strongly Agree	Strongly Agree
12	Yes	Zoom	Unsure/Neutral	Agree	Agree
13	Yes	Zoom	Agree	Unsure/Neutral	Agree
14	Yes	Zoom	Agree	Agree	Disagree

Table 2B HyFlex Student Survey Summary

Student #	The technology tool helped me learn the material in this course.	This tool was a good fit for this course given the way it was taught.	If I were to take another HyFlex class, I would want the instructor to utilize this tool.
1	Unsure/Neutral	Unsure/Neutral	Unsure/Neutral
2	Strongly Agree	Strongly Agree	Strongly Agree
3	Unsure/Neutral	Agree	Agree
4	Agree	Agree	Strongly Agree
5	Unsure/Neutral	Unsure/Neutral	Agree
6	Strongly Agree	Agree	Strongly Agree
7	Agree	Agree	Agree
8	Strongly Agree	Strongly Agree	Strongly Agree
9	Strongly Agree	Strongly Agree	Strongly Agree
10	Agree	Agree	Unsure/Neutral
11	Strongly Agree	Agree	Strongly Agree
12	Agree	Unsure/Neutral	Unsure/Neutral
13	Unsure/Neutral	Unsure/Neutral	Agree
14	Disagree	Unsure/Neutral	Unsure/Neutral

Table 2C HyFlex Student Survey Summary

Student #	What did you like about using the technology tool?	What did you dislike about using the technology tool?	What are some recommendations you would make to the instructor about using the tool in the future?
1	felt like classroom feel	learning was restricted	Don't do this again
2	Didn't Use	Didn't use	Didn't use
3	being able to attend class virtually without missing any information	Not being able to see all of the notes in class.	Using a better software that will assist the professors, that is both user friendly and efficient at its job.
4	If you couldn't make it in person to class you could later review the class.	Not as easy to learn as in person but is still helpful option.	Share audio with class in person with the one online.
5	I did not use the tool, however I liked being able to re watch the class lecture due to this tool.	N/A	N/A
6	I liked that our lectures were recorded and saved online so that I could look back at older lectures to study or find things I missed	It wasn't a perfect match for this type of class	Find a way to have the class a bit more interactive for the students attending virtually
7	Every lecture was recorded so after class I could go back and review	Took time away from class. Sometimes it would take 10 minutes to get set up.	Set up before class
8	In was essay to use	Recordings were in a wired format	More screen recording
9	Ability to easily watch screen shared content	Sometimes hard to interact with other students but unimportant for this class	None

10	I was able to attend class from home, even if I was sick or had to stay home for some reason I could still attend class.	nothing	better camera placement for when writing on the board/ higher quality camera.
11	It provided me with the option to still attend class but at home instead of commuting.	When writing on the actual whiteboard in class, it was difficult to see.	Make sure if you are going to use the whiteboard or something similar, that the people on the call have a decent view of it.
12	I attended in person	I did not use it	make it more accessible
13	It allowed me to catch up on the material if I couldn't attend the inspersion course	use of Zoom	Better access of recorded lectures
14	Zoom was easy to utilize and install on my personal machine. the overall quality was hit or miss but that was more due to our institutions Wifi network then the course.	It was sometimes very difficult to follow the lesson and at times hear the professor, as the semester went on these issues dissipated.	having slides that broke down the topics discussed more. there were sometimes what felt like large jumps in content that would take hours later to decipher and understand. I am still not sure I fully understand this course.

References

1. Tetsuro Kakeshita, “Improved HyFlex Course Design Utilizing Live Online and On-demand Courses” In Proceedings of the 13th International Conference on Computer Supported Education (CSEDU 2021) - Volume 2, pages 104-113. DOI: 10.5220/0010470901040113.

2. Tonia J. Wilson and Melina Alexander “HyFlex Course Delivery: Addressing the Change in Course Modality Brought on by the Pandemic” JISTE, Vol. 25, No. 2, 2021.

3. Diane Wright “The HyFlex Course Design: A Case Study on Adult and Career Education Courses” National Social Science Association, Issue: Volume 48 # 2 ISSN 2154-1736.

4. Lydia Kyei-Blankson, Francis Godwyll and Mohamed A. Nur-Awaleh “Innovative blended delivery and learning: exploring student choice, experience, and level of satisfaction in a hyflex course” Int. J. Innovation and Learning, Vol. 16, No. 3, 2014.

5. Jining Han, Yuying Yang, Yun Li “Students’ Responses to a HyFlex Course: A Case Study in the Educational Technology Setting” The 2022 5th International Conference on Big Data and Education (ICBDE’22), February 26–28, 2022, Shanghai, China. ACM, New York, NY, USA, 7 pages. https://doi.org/10.1145/3524383.3524394.

6. Patricia McGee and Abby Reis “Blended Course Design: A Synthesis of Best Practice” Journal of Asynchronous Learning Networks, Volume 16: Issue 4.

7. G´eraldine Heilporn and Sawsen Lakhal “Converting a graduate-level course into a HyFlex modality: What are effective engagement strategies?” The International Journal of Management Education 19 (2021) 100454. https://doi.org/10.1016/j.ijme.2021.100454.

8. Krista Sowell, Kem Saichaie, Jacqueline Bergman “High Enrollment and HyFlex: The Case for an Alternative Course Model” Journal on Excellence in College Teaching (2019), 30(2), 5-28.

9. Mariam Mouse Matta Abdelmalak, El Kharga ‘Expanding Learning Opportunities for Graduate Students with HyFlex Course Design” International Journal of Online Pedagogy and Course Design (2016) Volume 6, Issue 4.

Appendix

MTC 476 (01F): Finite Element Applications

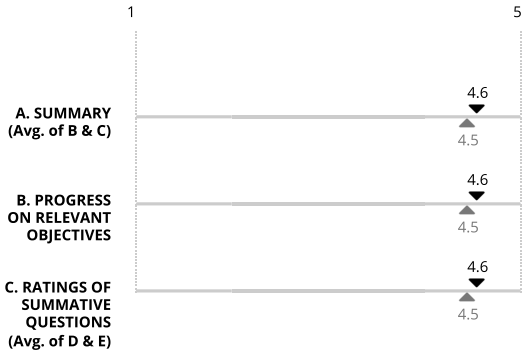
Fall 2022 | Kazi Imran

20 | Students Enrolled
17 | Students Responded
85% | Response Rate

Summative

▼ | Adjusted
▲ | Raw
| 3 Point Plus/Minus

Your Average Scores
5 Point Scale



Your Overall Mean Ratings
5 Point Scale

Ratings of Summative Questions	Raw	Adj.
D. Excellent Teacher	4.7	4.7
E. Excellent Course	4.4	4.5

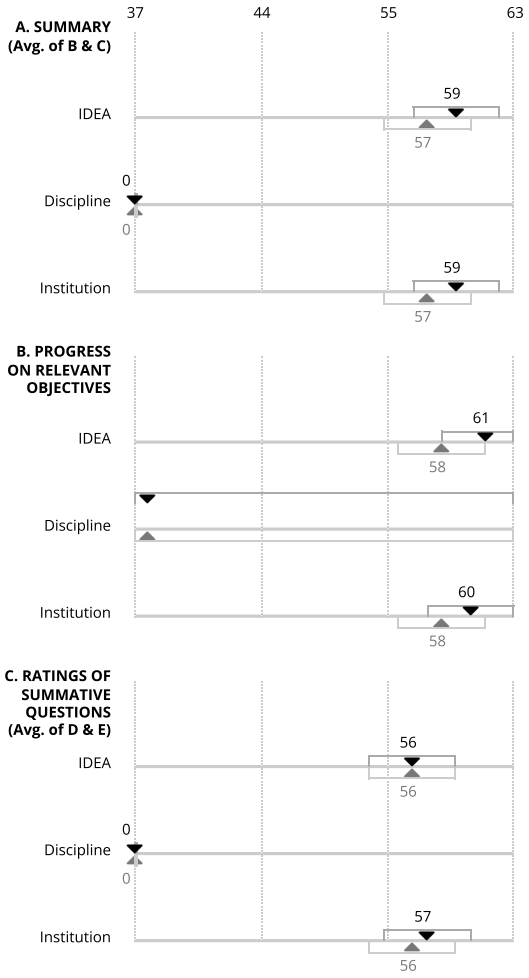
Your Overall Converted Ratings

Ratings of Summative Questions	Raw	Adj.
D. Excellent Teacher		
IDEA	56	56
Discipline		
Institution	56	57
E. Excellent Course		
IDEA	55	56
Discipline		
Institution	55	56

Converted Average Buckets
Based on a Bell Curve

Much Lower *(Lowest 10%)* **37 or Lower**	Lower *(Next 20%)* **38 - 44**	Similar *(Middle 40%)* **45 - 55**	Higher *(Next 20%)* **56 - 62**	Much Higher *(Highest 10%)* **63 or Higher**

Your Converted Average



		Your Average (5 Point Scale)		% of Students Rating		Your Converted Average					
						IDEA		Discipline		Institution	
Student Ratings of Learning on Relevant Objectives	**Importance Rating**	**Raw**	**Adj.**	**1 or 2**	**4 or 5**	**Raw**	**Adj.**	**Raw**	**Adj.**	**Raw**	**Adj.**
Gaining a basic understanding of the subject (e.g., factual knowledge, methods, principles, generalizations, theories)	E	4.4	4.5	0	82	56	59			57	59
Developing knowledge and understanding of diverse perspectives, global awareness, or other cultures	M	3.1	3.1	35	47	36	36			45	46
Learning to *apply* course material (to improve thinking, problem solving, and decisions)	E	4.5	4.7	0	88	59	62			59	61
Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course	M	4.4	4.5	0	82	55	58			56	58
Acquiring skills in working with others as a member of a team	M	3.8	3.9	12	59	49	51			53	55
Developing creative capacities (inventing; designing; writing; performing in art, music, drama, etc.)	M	3.7	3.9	18	59	50	53			53	56
Gaining a broader understanding and appreciation of intellectual/cultural activity (music, science, literature, etc.)	M	3.2	3.2	35	47	42	42			48	49
Developing skill in expressing myself orally or in writing	M	3.1	3.1	35	41	38	38			45	46
Learning how to find, evaluate, and use resources to explore a topic in depth	M	4.2	4.4	0	71	55	58			56	58
Developing ethical reasoning and/or ethical decision making	M	3.7	3.7	24	59	46	47			51	52
Learning to *analyze* and *critically evaluate* ideas, arguments, and points of view	M	4	4	6	71	50	51			53	55
Learning to apply knowledge and skills to benefit others or serve the public good	M	4.1	4.2	6	76	51	54			54	56
Learning appropriate methods for collecting, analyzing, and interpreting numerical information	M	4.6	4.7	0	94	62	64			62	63

		Your Converted Average		
Course Description	**Your Average**	**IDEA**	**Discipline**	**Institution**
Amount of coursework	3.4	52		53
Difficulty of subject matter	3.6	54		55

		Your Converted Average		
Student Description	**Your Average**	**IDEA**	**Discipline**	**Institution**
As a rule, I put forth more effort than other students on academic work.	3.5	40		45
I really wanted to take this course regardless of who taught it.	3.6	46		48
When this course began I believed I could master its content.	4	52		54
My background prepared me well for this course's requirements.	3.9	53		52

Formative

Teaching Essentials	**Your Average**	**Students Rating**	**Suggested Action**
Demonstrated the importance and significance of the subject matter	4.5	0% (1 or 2) 88% (4 or 5)	You employed the method more frequently than those teaching classes of similar size and level of student motivation.
Made it clear how each topic fit into the course	4.3	6% (1 or 2) 82% (4 or 5)	You employed the method with frequency typical of those teaching classes of similar size and level of student motivation.
Explained course material clearly and concisely	4.5	0% (1 or 2) 94% (4 or 5)	You employed the method more frequently than those teaching classes of similar size and level of student motivation.
Introduced stimulating ideas about the subject	4.2	0% (1 or 2) 82% (4 or 5)	You employed the method with frequency typical of those teaching classes of similar size and level of student motivation.
Inspired students to set and achieve goals which really challenged them	4.1	0% (1 or 2) 71% (4 or 5)	You employed the method with frequency typical of those teaching classes of similar size and level of student motivation.

Reflective and Integrative Learning	**Your Average**	**Students Rating**	**Suggested Action**
Encouraged students to reflect on and evaluate what they have learned	4.4	6% (1 or 2) 88% (4 or 5)	You employed the method more frequently than those teaching classes of similar size and level of student motivation.
Stimulated students to intellectual effort beyond that required by most courses	4.2	6% (1 or 2) 76% (4 or 5)	You employed the method with frequency typical of those teaching classes of similar size and level of student motivation.
Related course material to real life situations	4.3	6% (1 or 2) 94% (4 or 5)	You employed the method more frequently than those teaching classes of similar size and level of student motivation.
Created opportunities for students to apply course content outside the classroom	4	6% (1 or 2) 71% (4 or 5)	You employed the method with frequency typical of those teaching classes of similar size and level of student motivation.

Collaborative Learning	**Your Average**	**Students Rating**	**Suggested Action**

Active Learning	**Your Average**	**Students Rating**	**Suggested Action**

Quantitative

Describe the frequency of your instructor's teaching procedures. *The Instructor:*	**Hardly Ever**	**Occasionally**	**Sometimes**	**Frequently**	**Almost Always**	**N**	**DNA**	**SD**	**M**
Found ways to help students answer their own questions	0% (0)	0% (0)	5.88% (1)	41.18% (7)	52.94% (9)	17	0	0.61	4.47
Helped students to interpret subject matter from diverse perspectives (e.g., different cultures, religions, genders, political views)	11.76% (2)	5.88% (1)	17.65% (3)	17.65% (3)	47.06% (8)	17	0	1.38	3.82
Encouraged students to reflect on and evaluate what they have learned	0% (0)	5.88% (1)	5.88% (1)	35.29% (6)	52.94% (9)	17	0	0.84	4.35
Demonstrated the importance and significance of the subject matter	0% (0)	0% (0)	11.76% (2)	29.41% (5)	58.82% (10)	17	0	0.7	4.47
Formed teams or groups to facilitate learning	17.65% (3)	23.53% (4)	11.76% (2)	17.65% (3)	29.41% (5)	17	0	1.5	3.18
Made it clear how each topic fit into the course	0% (0)	5.88% (1)	11.76% (2)	29.41% (5)	52.94% (9)	17	0	0.89	4.29
Provided meaningful feedback on students' academic performance	0% (0)	5.88% (1)	11.76% (2)	29.41% (5)	52.94% (9)	17	0	0.89	4.29
Stimulated students to intellectual effort beyond that required by most courses	0% (0)	5.88% (1)	17.65% (3)	29.41% (5)	47.06% (8)	17	0	0.92	4.18
Encouraged students to use multiple resources (e.g., Internet, library holdings, outside experts) to improve understanding	0% (0)	5.88% (1)	35.29% (6)	11.76% (2)	47.06% (8)	17	0	1.03	4
Explained course material clearly and concisely	0% (0)	0% (0)	5.88% (1)	41.18% (7)	52.94% (9)	17	0	0.61	4.47

Describe the frequency of your instructor's teaching procedures. *The Instructor:*	**Hardly Ever**	**Occasionally**	**Sometimes**	**Frequently**	**Almost Always**	**N**	**DNA**	**SD**	**M**
Related course material to real life situations	0% (0)	5.88% (1)	0% (0)	52.94% (9)	41.18% (7)	17	0	0.75	4.29
Created opportunities for students to apply course content outside the classroom	0% (0)	5.88% (1)	23.53% (4)	35.29% (6)	35.29% (6)	17	0	0.91	4
Introduced stimulating ideas about the subject	0% (0)	0% (0)	17.65% (3)	47.06% (8)	35.29% (6)	17	0	0.71	4.18
Involved students in hands-on projects such as research, case studies, or real life activities	5.88% (1)	5.88% (1)	29.41% (5)	23.53% (4)	35.29% (6)	17	0	1.16	3.76
Inspired students to set and achieve goals which really challenged them	0% (0)	0% (0)	29.41% (5)	35.29% (6)	35.29% (6)	17	0	0.8	4.06
Asked students to share ideas and experiences with others whose backgrounds and viewpoints differ from their own	11.76% (2)	5.88% (1)	17.65% (3)	29.41% (5)	35.29% (6)	17	0	1.32	3.71
Asked students to help each other understand ideas or concepts	0% (0)	0% (0)	17.65% (3)	35.29% (6)	47.06% (8)	17	0	0.75	4.29
Gave projects, tests, or assignments that required original or creative thinking	0% (0)	5.88% (1)	11.76% (2)	29.41% (5)	52.94% (9)	17	0	0.89	4.29
Encouraged student-faculty interaction outside of class (e.g., office visits, phone calls, email)	0% (0)	0% (0)	17.65% (3)	23.53% (4)	58.82% (10)	17	0	0.77	4.41

Describe your progress on:	**No Apparent Progress**	**Slight Progress**	**Moderate Progress**	**Substantial Progress**	**Exceptional Progress**	**N**	**DNA**	**SD**	**M**
Gaining a basic understanding of the subject (e.g., factual knowledge, methods, principles, generalizations, theories)	0% (0)	0% (0)	17.65% (3)	23.53% (4)	58.82% (10)	17	0	0.77	4.41
Developing knowledge and understanding of diverse perspectives, global awareness, or other cultures	23.53% (4)	11.76% (2)	17.65% (3)	23.53% (4)	23.53% (4)	17	0	1.49	3.12
Learning to *apply* course material (to improve thinking, problem solving, and decisions)	0% (0)	0% (0)	11.76% (2)	23.53% (4)	64.71% (11)	17	0	0.7	4.53
Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course	0% (0)	0% (0)	17.65% (3)	29.41% (5)	52.94% (9)	17	0	0.76	4.35
Acquiring skills in working with others as a member of a team	0% (0)	11.76% (2)	29.41% (5)	23.53% (4)	35.29% (6)	17	0	1.04	3.82
Developing creative capacities (inventing; designing; writing; performing in art, music, drama, etc.)	5.88% (1)	11.76% (2)	23.53% (4)	23.53% (4)	35.29% (6)	17	0	1.23	3.71
Gaining a broader understanding and appreciation of intellectual/cultural activity (music, science, literature, etc.)	23.53% (4)	11.76% (2)	17.65% (3)	11.76% (2)	35.29% (6)	17	0	1.59	3.24
Developing skill in expressing myself orally or in writing	23.53% (4)	11.76% (2)	23.53% (4)	11.76% (2)	29.41% (5)	17	0	1.53	3.12
Learning how to find, evaluate, and use resources to explore a topic in depth	0% (0)	0% (0)	29.41% (5)	17.65% (3)	52.94% (9)	17	0	0.88	4.24
Developing ethical reasoning and/or ethical decision making	5.88% (1)	17.65% (3)	17.65% (3)	23.53% (4)	35.29% (6)	17	0	1.28	3.65
Learning to *analyze* and *critically evaluate* ideas, arguments, and points of view	5.88% (1)	0% (0)	23.53% (4)	29.41% (5)	41.18% (7)	17	0	1.08	4
Learning to apply knowledge and skills to benefit others or serve the public good	0% (0)	5.88% (1)	17.65% (3)	41.18% (7)	35.29% (6)	17	0	0.87	4.06
Learning appropriate methods for collecting, analyzing, and interpreting numerical information	0% (0)	0% (0)	5.88% (1)	29.41% (5)	64.71% (11)	17	0	0.6	4.59

The Course: *On the next two items, compare this course with others you have taken at this institution.*	**Much Less than Most Courses**	**Less than Most Courses**	**About Average**	**More than Most Courses**	**Much More than Most Courses**	**N**	**DNA**	**SD**	**M**
Amount of coursework	0% (0)	11.76% (2)	41.18% (7)	41.18% (7)	5.88% (1)	17	0	0.77	3.41
Difficulty of subject matter	0% (0)	0% (0)	58.82% (10)	23.53% (4)	17.65% (3)	17	0	0.77	3.59

For the following items, choose the option that best corresponds to your judgment.	**Definitely False**	**More False than True**	**In Between**	**More True than False**	**Definitely True**	**N**	**DNA**	**SD**	**M**
As a rule, I put forth more effort than other students on academic work.	0% (0)	11.76% (2)	35.29% (6)	41.18% (7)	11.76% (2)	17	0	0.85	3.53
I really wanted to take this course regardless of who taught it.	5.88% (1)	11.76% (2)	29.41% (5)	23.53% (4)	29.41% (5)	17	0	1.19	3.59
When this course began I believed I could master its content.	0% (0)	5.88% (1)	23.53% (4)	35.29% (6)	35.29% (6)	17	0	0.91	4
My background prepared me well for this course's requirements.	5.88% (1)	5.88% (1)	11.76% (2)	47.06% (8)	29.41% (5)	17	0	1.08	3.88
Overall, I rate this instructor an excellent teacher.	0% (0)	0% (0)	5.88% (1)	23.53% (4)	70.59% (12)	17	0	0.59	4.65
Overall, I rate this course as excellent.	0% (0)	0% (0)	11.76% (2)	35.29% (6)	52.94% (9)	17	0	0.69	4.41

Qualitative

Comments -

- Great teacher, very understanding and cooperative. Clearly wants you to succeed and will help you do so.
- I really enjoyed this class being shy-Flex which allowed for me to easily be able to access course content when I was unable to attend in person class, or just needed a refresher on certain topics
- One of the best electives in the MET program
- good course good teacher
- Professor Kazi is one of the best professors I have had in this college. He considers his student’s understandings and he cares about the material he teaches. I am grateful to have had him for this course.
- Great Teacher that cares about his students.
- Professor Imran like I said in my other evaluation, is one of the best and most helpful teachers I’ve ever had at SunyPoly. I’ve been here for 5 years and I’d say this no matter my grade in this course. Very few teachers provide additional help and have the patience to re teach material to students who don’t initially understand. But Professor Imran does.
- Very good course. I would like to see more complex problems and real world examples. I feel that would help better prepare for the real world. The problems we solved were helpful but I would like something very challenging.
- Grate Teacher