

# STEM Student Enrollment and Engagement through Connections (SEEC)

## SEEC Engineering Transfer Student Profile

Spring, 2009

DRAFT

IOWA STATE UNIVERSITY

**DMACC**  
DES MOINES AREA  
COMMUNITY COLLEGE



**NATIONAL SCIENCE FOUNDATION**  
STEM Talent Expansion Program (STEP)

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## STUDENT ENROLLMENT

### Iowa Community Colleges Transfer to Engineering

#### All Transfers Five Years 2004-2009

Year	*Fall	Spring	Total
04-05	214	25	239
05-06	185	34	219
06-07	211	46	257
07-08	205	45	250
08-09	214	57	271
<b>Total</b>			<b>1236</b>

\* Fall includes summer

#### Fall/Summer 2007 DMACC

Number	%
104	
28	26.9%

#### Fall/Summer 2008 DMACC

Number	%
120	
42	35.0%

#### All Transfers 2004-2009

#### Transfers from All Iowa Community Colleges Five Years 2004-2009

Year	*Fall	Spring	Total
04-05	112	13	125
05-06	106	16	122
06-07	105	17	122
07-08	104	14	118
08-09	120	18	138
<b>Total</b>	<b>547</b>	<b>78</b>	<b>625</b>

\* Fall includes summer

	Number	%
All Transfers*	1236	
All Female*	135	10.9%

\* From in and out of state, 2 -4 year colleges, and the Military

#### All Transfers from Iowa Community Colleges

	Number	%
All Transfers from Iowa Community Colleges	625	
DMACC	188	32.1%
DMACC Females	19	10.1%
DMACC White	152	80.9%
DMACC Non-white	26	13.8%
Prefer not to indicate/ International	10	4.9%

## STUDENT CHARACTERISTICS

#### All Iowa Community Colleges by Ethnicity 2004-2009

Ethnicity	Number	%
American Indian/ Alaskan	4	0.6%
Black	25	4.0%
White	518	82.8 %
Asian or Pacific Islander	20	3.2%
Hispanic	9	1.4%
Prefer not to indicate	12	1.9%
No code	37	5.9%
<b>Total</b>	<b>625</b>	

## STUDENT CHARACTERISTICS (cont.)

### 2004-2009 Transfers to ISU College of Engineering by DMACC Campus N=188

### DMACC Ages

	N=188		Age	Number	%
	Number	%			
<b>Ankeny Campus</b>	136	66.0%	19-23	105	45.4%
Females	17	8.2%	24-28	83	35.9%
<b>Boone</b>	24	11.7%	29-33	28	12.1%
Females	2	0.9%	34-38	8	3.5%
<b>Carroll</b>	3	1.5%	39-48	7	3.0%
<b>Urban</b>	21	10.2%			
Females	1	0.5%			
<b>Newton</b>	1	0.5%			
<b>West</b>	3	1.5%			

### DMACC Transfer to Engineering Retention Data 2004-2007

Enter Fall	#	Still in dept.	% Still in dept.	Other Engr	Still Engr	% Still Engr	Other College	% Other college	Total at ISU	% at ISU
2004	<b>38</b>	9	<b>23.7%</b>	0	<b>9</b>	<b>23.7%</b>	6	<b>15.8%</b>	15	
	<b>Grad</b>	6		0			5		11	
		15	<b>39.5%</b>	<b>0</b>	<b>15</b>	<b>39.5%</b>	11		26	<b>68.4%</b>
2005	<b>21</b>	4	<b>19.0%</b>	0	<b>4</b>	<b>19.0%</b>	2	<b>9.5%</b>	6	
	<b>Grad</b>	7		0			0		5	
		11	<b>52.4%</b>	<b>0</b>	<b>11</b>	<b>52.4%</b>	2		11	<b>52.4%</b>
2006	<b>22</b>	5	<b>22.7%</b>	2	<b>7</b>	<b>31.8%</b>	5	<b>22.7%</b>	12	
	<b>Grad</b>	0		0			0		0	
		5	<b>22.7%</b>	<b>2</b>	<b>7</b>	<b>31.8%</b>	5		12	<b>54.5%</b>
2007	32	12	<b>37.5%</b>	4	<b>16</b>	<b>50.0%</b>	8	<b>25.0%</b>	24	<b>75.0%</b>

## Student Retention: Community College Transfers VS. ISU Native Students

	Entry	2 Year Still Enrolled			3 Year Still Enrolled			4 Year Still Enrolled				
		Eng.	Other	% @ ISU or grad	Eng.	Other	% @ ISU or grad	Eng.	Other	% @ ISU or grad		
2004	112	42	37.5%	17.0%	58.0%	25	22.3%	11.6%	0	7.1%	1.8%	38.4%
	1016	754	74.2%	14.9%	89.1%	618	60.8%	20.2%	6	57.2%	20.7%	77.9%
2005	106	52	49.1%	16.0%	66.0%	55	51.9%	13.2%	55	51.9%	13.2%	85.8%
	967	689	71.3%	16.1%	87.4%	587	60.7%	21.6%	587	60.7%	21.6%	82.3%
2006	109	62	56.9%	14.7%	71.6%							
	1048	793	75.7%	12.3%	88.0%							

**Red** = Community College Transfers

**Blue** = ISU Native Students

**Engineering Admissions  
Partnership Program (E-APP):**

The ISU Engineering Partnership Program is a collaborative program between ISU's College of Engineering, Iowa's Community Colleges, and ISU Admissions. Upon acceptance to the program students are invited to participate in the following menu of options: EGR 100, Advising, Transfer Planning and Grad Planner, Social Network, Peer Mentor Interaction, APP and Transfer Recruitment Events, VEISHEA Transfer Event, Engineering Career Fair (other events), Connections with PWISE, Scholarships (ETEC & E2020). The following EGR 100 data is part of the evaluation for the E-APP Program with DMACC.

**EGR 100: Engineering Orientation**

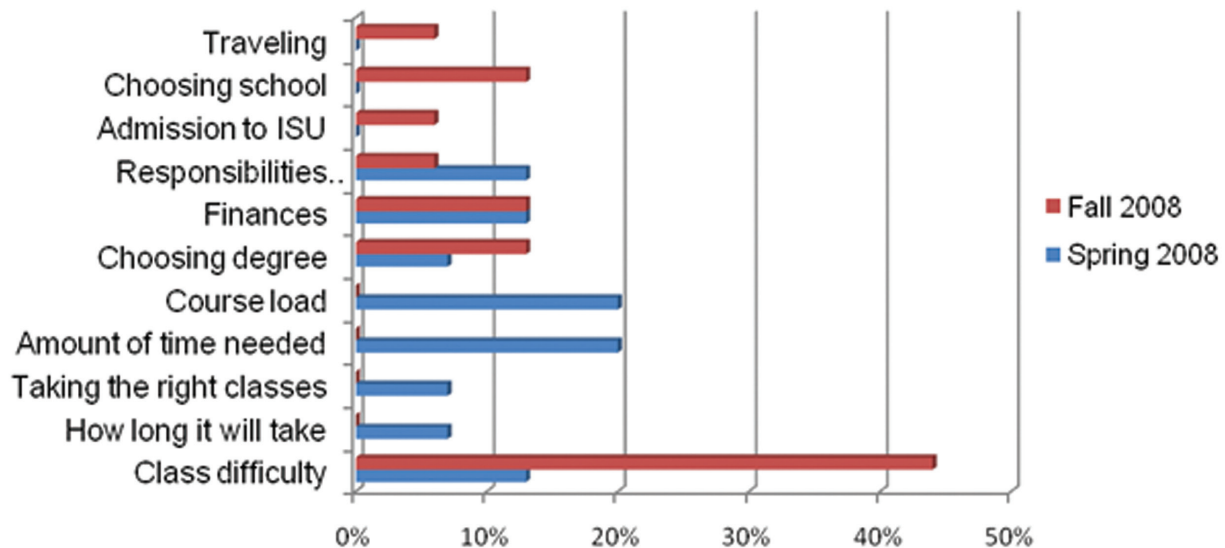
In the spring '08 semester, EGR 100, an Engineering Orientation course was developed and facilitated by ISU and offered for the first time at the DMACC-Ankeny campus.

From the spring'08 and fall'08 semesters, the first assignment provided information and perceptions of pre-engineering students through open-ended questions:

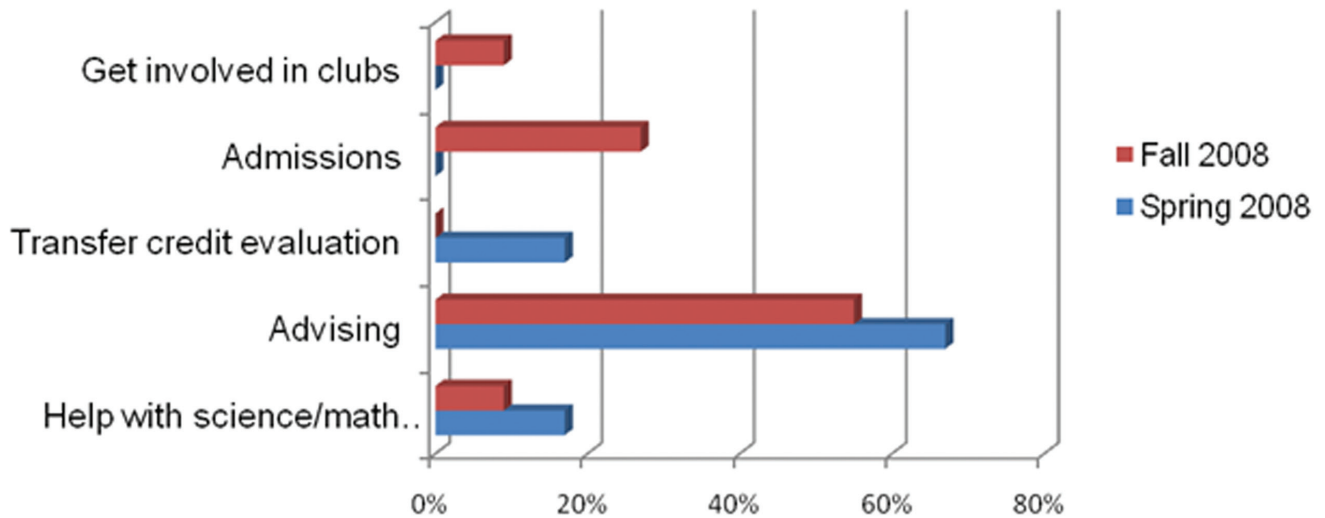
**Declared Majors**

	Spring 2008	Fall 2008
<b>Mechanical</b>	33.0%	32.0%
<b>Chemical</b>	7.0%	11.0%
<b>Materials</b>	13.0%	0.0%
<b>Agriculture</b>	7.0%	5.0%
<b>Civil</b>	13.0%	5.0%
<b>Industrial</b>	7.0%	0.0%
<b>Computer</b>	7.0%	0.0%
<b>Electrical</b>	7.0%	16.0%
<b>Software</b>	7.0%	0.0%
<b>Construction</b>	0.0%	21.0%
<b>Other</b>	0.0%	11.0%

**Perceived Greatest Concerns/Difficulties in obtaining an Engineering Degree**



## Perceived as Helpful in increasing success in transitioning to ISU



### Fall 2008 EGR 100

#### Focus Group Highlights: Student Voices

"I went to the Program for Women in Science and Engineering conference and got to know a lot of the counselors and different people and that helped me. I even keep in contact with some of the girls I met there. We talk about different classes we're taking and when we're transferring and stuff like that, so it makes me feel a little bit more comfortable about the transfer process."

"We had a couple professors who came down and did demonstrations. I was very surprised that at least two of them came down and said, 'If you have any questions e-mail or call me.' Although we're not technically Iowa State students, they were very willing to help through the E-APP. I was very surprised at just how helpful the advisors have been."

"I've actually been in the E-APP since last fall and I've contacted my advisor at Iowa State several times and he's been incredibly prompt at returning my e-mails. I've gotten responses within hours and not days, and I've been very impressed with that. He's given me some advice on a list of classes I thought I would take this semester and he recommended some changes and that was very helpful to me."

## ENGINEERING STUDENTS ENTERING WITH AP AND DUAL CREDIT

### Engineering students entering with AP credits

Entry Year	# of credits	# of students	Average credits per students	% of new Engineering students bringing in AP Credit
2000	2235	227	9.8	22.0%
2001	2003	231	8.7	18.0%
2002	2032	237	8.6	21.0%
2003	2408	259	9.3	24.0%
2004	2443	241	10.1	23.0%
2005	2022	214	9.4	22.0%
2006	2716	289	9.4	27.0%
2007	3077	287	10.7	24.0%
2008	3326	307	10.8	25.0%
<b>% change from 2000-2008</b>	49.0%	35.0%	10.0%	16.0%

### Engineering students entering with Dual Enrollment

Entry Year	# of credits	# of students	Average credits per students	% of new Engineering students bringing in AP Credit
2000	2701	276	9.8	26.0%
2001	3849	373	10.3	30.0%
2002	4382	390	11.2	35.0%
2003	5228	421	12.4	40.0%
2004	5373	445	12.1	42.0%
2005	5656	433	13.1	44.0%
2006	5886	454	13.0	43.0%
2007	7758	542	14.3	45.0%
2008	7797	549	14.2	45.0%
<b>% change from 2000-2008</b>	189.0%	99.0%	45.0%	71.0%



## TRANSFER STUDENT QUESTIONNAIRE

### General Courses

In spring of 2007, the Office of Community College Research and Policy (OCCRP) conducted a study of transfer students from Iowa community colleges at ISU using the Laanan-Transfer Students' Questionnaire (L-TSQ) © on-line. A sample of this study (n=1512) included transfer students in fall 2005, spring 2006, and fall 2006 identified by the Office of the Registrar. The response rate was approximately 41% (n=625).

The following section presents data from transfer students in Engineering majors. The students transferring into Engineering majors represents approximately 9.0% (n=58) of the total respondents.

	<b>Somewhat agree- Strongly agree</b>
Critical thinking	87.5%
Intensive writing	61.4%
Challenging	73.7%
ISU standards	71.9%
ISU Major	80.0%
Extensive reading/writing	59.6%

<b>Age</b>	<b>%</b>
19-22	69.0%
23-27	17.2%
29-35	10.3%
40-45	3.4%
<b>Gender</b>	<b>%</b>
Female	6.9%
Male	93.1%

### Academic Advising/Counseling Services

	<b>Somewhat agree- Strongly agree</b>
I consulted with academic advisors/counselors	77.2%
Information received from academic advisor(s)/counselor(s) was helpful	69.6%
I met with academic advisors/counselors on a regular basis	43.9%
I talked with an advisor/counselor about courses to take, requirements, and education plans	80.4%
I discussed my plans for transferring to a four-year college with an academic advisor	80.0%
Advisors/counselors identified courses need to meet the general education/major requirements of a four-year college or university I was interested in attending.	66.7%

### What is the highest academic degree you intend to obtain?

	<b>Any College</b>	<b>ISU</b>
Bachelor's (BA or BS)	56.9%	75.9%
Master's (MA or MS)	31.0%	20.7%
Doctorate (Ph.D. or Ed.D)	5.2%	3.4%
Medical (MD, DDS, DO or DVM)	0.0%	0.0%
Law (JD or LLB)	1.7%	0.0%
Other	5.2%	0.0%

### Engineering Majors N=58

	<b>%</b>
Agricultural Engineering (A E)	5.2%
Aerospace Engineering (AER E)	13.8%
Civil Engineering (C E)	10.3%
Chemical Engineering (CH E)	10.3%
Construction Engineering (CON E)	6.9%
Electrical Engineering (E E)	10.3%
Engineering (ENGR)	5.2%
Industrial Engineering (I E)	3.4%
Mechanical Engineering (M E)	34.5%

### Transfer Process

	<b>Somewhat agree- Strongly agree</b>
Researched ISU to better understand environment	63.2%
Knew academic expectations at ISU	57.9%
Visited the campus to learn area	75.4%
Spoke to academic counselors	75.4%
Visited admissions office at ISU	63.2%
Spoke to former community college transfers	31.6%

### Adjustment Process

	<b>Agree somewhat- Agree strongly</b>
Academic standards, easy	61.8%
Overwhelmed by size	36.4%
Felt alienated	25.5%
Large classes intimidating	30.9%
Stress Increase	85.5%
Dip in grades	67.3%
Competition	52.7%

### Reasons that influenced decision to attend ISU

	<b>Somewhat agree- Strongly agree</b>
Academic reputation	89.3%
Financial assistance	48.2%
Affordable tuition	78.6%
Counselor at 2-year	35.7%
Graduates get good jobs	92.9%
Convenience and location	69.6%

### College Satisfaction

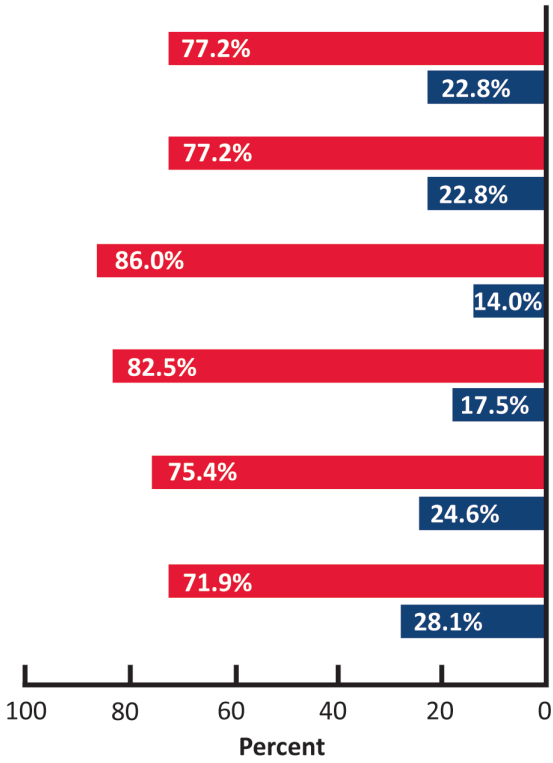
	<b>Satisfied-Very Satisfied</b>
Sense of belonging	83.6%
Decisions to transfer	87.3%
Quality of instruction	76.4%
Financial aid services	58.2%
Contact with faculty	63.6%
Class size	65.5%
Overall college experience	89.1%

### General Perceptions of ISU

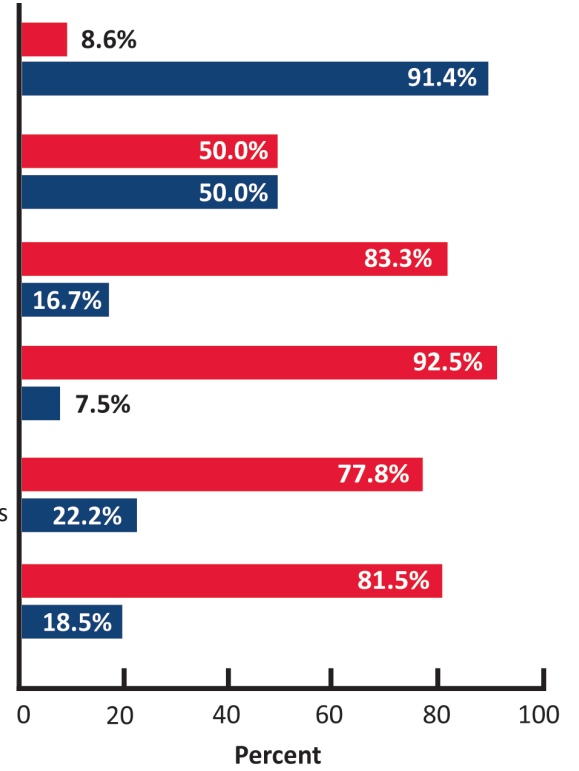
	<b>Agree somewhat- Agree strongly</b>
Faculty accessible to students	56.4%
Red tape	67.3%
Stigma of community college	38.2%
Professors interested in academic development	74.5%
Students services responsive	69.1%
Students have to take initiative	92.6%
Would recommend	90.9%
If start over same	94.5%

**TSQ: COURSE LEARNING**

**Community College**



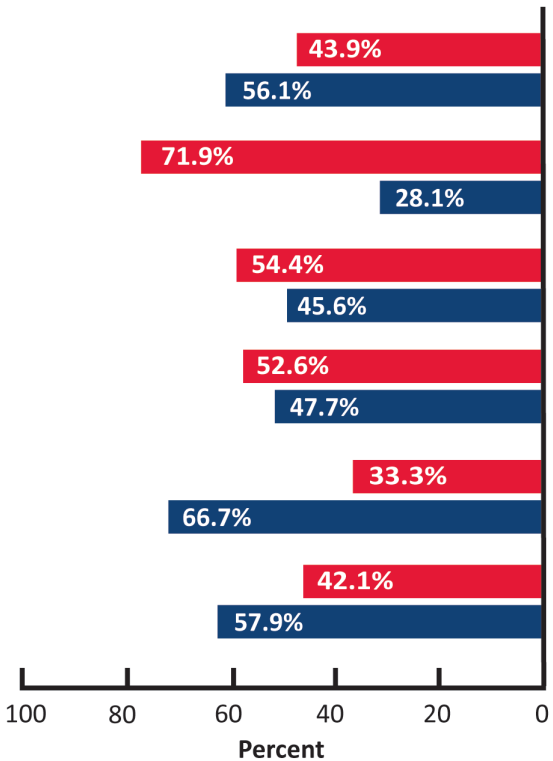
**Iowa State University**



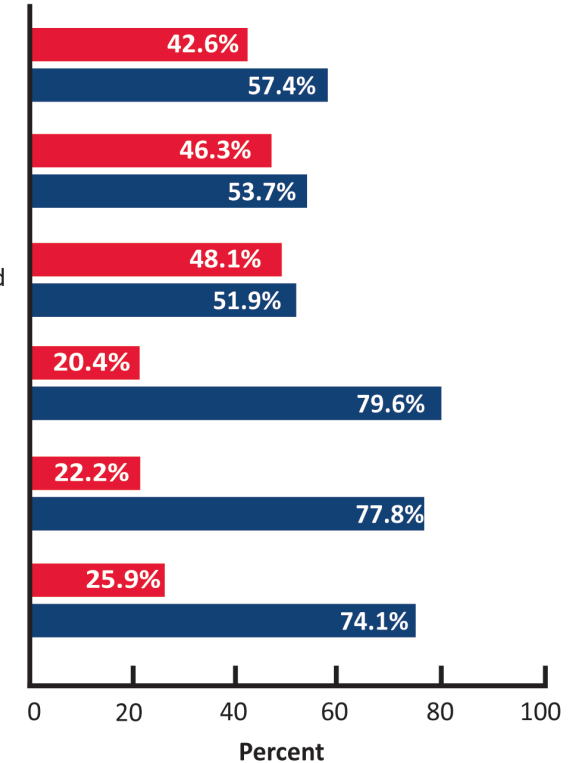
■ Often - Very Often    ■ Never - Occasionally

**TSQ: EXPERIENCES WITH FACULTY**

**Community College**



**Iowa State University**



■ Often - Very Often    ■ Never - Occasionally

## OPEN-ENDED QUESTIONS FROM TSQ

### Q #1 from TSQ

**What factors helped you to adjust (or made your transfer unsuccessful) to ISU?**

#### **Community college/University faculty and staff/advisor**

“Other than my own initiative, I accidentally met one of my instructors from DMACC one day at the grocery store, shortly after transferring into ISU. He told me I would be fine here. That was an enormous help.”

“I had a good advisor and good teachers.”

“I feel that advisors helped me adjust very well and made it easy to start classes.”

“I think the best thing for me was having a set student advisor in my program. She was always around and would answer my questions whenever.”

#### **Campus resources/programs**

“It went good because I reached out to others and took advantage of all the offered services and groups that I wanted to.”

“The introductory classes, such as a ConE learning community, are also good. Everyone thinks they are a waste of time, but I think they do the little things that make it a lot better.”

“Utilizing the support offered and my leadership skills from tutoring high level math at DMACC were helpful.”

“I joined the WISE transfer team when I enrolled and it was really nice to have that group of girls to meet and feel a part of a group. Along with that program, I was placed in an apartment with all transfer students, which I think really helped me adjust to the university.”

#### **Parents/family/friends and current students**

“I had a friend who had attended ISU before.”

“My friends who already were at ISU helped me adjust.”

“My fraternity, because I knew them from previous visits. My best friend and brother were already here also.”

“I also think my friends and family made it easy because I knew what to expect.”

## **Living with other students**

“When I moved into the fraternity, I immediately had a social life when I had none at the community college.”

My first year here I moved into Sterling University where they placed me into an apartment with girls I didn't know. I actually still live with one of them. It was a great opportunity to meet people in the apartment complex as well as on the bus to and from classes.”

“My roommate, who had been at ISU for two years, was helpful.”

### Q #2 from TSQ

**What might the CC done to enhance transition?**

#### **Nothing, needs were met**

“My community college experience was amazing and I knew that nothing could compete with it and they did everything to help me out with transferring.”

“Nothing, I just took summer classes.”

“Did enough already. At Kirkwood I had great instructors that challenged me just as much as at ISU.”

“I feel that DMACC did everything they could; however, I changed my major and this has caused me to have to go back and repeat some classes I took 20 years ago.”

“Don't know if there is much else they could do, large class sizes and so many different cultures/ethnicities in students and faculty are a big adjustment and community college can't really do anything to help with that.”

“I'm satisfied.”

“The instructor was very helpful and attentive of helping me on my problems. Their office hours are flexible.”

“I don't believe there much else other than the academic preparation they provided me with.”

#### **Provide more rigorous and challenging courses**

“Make school harder because at the community college I spent an average of 3 hours a week doing homework and at ISU it's around 25 hours a week. Also the community college should create more group projects.”

“Have harder classes at the community college.”

“IWCC could have had more demanding academics that would have even better prepared me for ISU.”

“Not have such dumbed down classes.”

“Make the classes harder. I needed a challenge and my community college didn’t give that to me so I slacked and my grades showed.”

“Have more difficult course work.”

“Expect more detailed, higher quality work.”

### **Prepare students for ISU experiences**

“Offer study learning classes.”

“Teach us what it’s like to be in a class like EM324 where a large percent of students fail.”

“I think that more of the classes could have had us do homework on the webct system.”

“Visit more and look around more. Sit in on a class before attending.”

“Put a little more emphasis on competition in the classroom.”

### **Assist in the transfer process**

“Have a better understanding of degree requirements and transfer credit evaluations. Some classes do not match up 1 credit to 1 credit.”

“If there had actually been someone to help me find out more about ISU and what it takes to transfer. I joined TRIO for help during classes and their counselors are the ones that helped transfer. Other than that, I had almost no help whatsoever.”

“Help with the transfer process more.”

## **ADVICE TO OTHER CC TRANSFERS**

### **Study and work hard**

“Don’t expect to blow off classes like at a community college. Take notes and review them after the class is over. Try to explain the lecture to other students to retain and gain comprehension.”

“Learn everything 100%, don’t just do enough to get by. It can come back to bite you pretty hard.”

“Study more!”

“Just do your homework and study.”

“Don’t get overwhelmed at the beginning and just try to stay on top of things.”

“If you can, study, study, study and gain good habits before you get to ISU. Don’t let the atmosphere of a community college make you think that it’s ok for you to slack off just like everyone else around you.”

“Don’t put off school work when you reach ISU.”

### **Be optimistic/You can do it**

“If anybody at ISU says the standards at DMACC are over and you will struggle, don’t believe them. Your own aptitude defines your success here. Some will struggle because they didn’t try hard enough early on in their education. If you attempt to learn in the beginning you will do fine, no matter what institution you started at.”

“Don’t be afraid of going somewhere new or different and don’t be afraid of things getting more difficult; if you want to do it, do it for yourself and you will be fine.”

“Try not to be overwhelmed by the university and the classes. It takes time to adjust, but it’s easy to feel like a part of the university after just a short while.”

“Go for it, don’t quit.”

### **Take as many courses at the community college as you can**

“Get math classes finished at the community college.”

“Try to take the proper courses for your field of study.”

“Take as many classes, required for your degree, as you can.”

“Take as many classes as possible at the community college, as they are cheaper, smaller class sizes, and English speaking instructors are the norm at the CC.”