Missouri Department of Higher Education and Workforce Development:

An Evaluation of CORE 42's Impact in Missouri

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Chapter 1: Introduction

Research Problem

In response to Senate Bill 997, the 2016 Missouri Transfer Curriculum Act charged the Missouri Coordinating Board for Higher Education (CBHE) with developing a standard general education core transfer curriculum for the state's 2-year and 4-year public higher education institutions and any independent institutions electing to participate (S.B. 997, 2016). As a result, in 2018, the Missouri Department for Higher Education and Workforce Development (MDHEWD) implemented CORE 42 to support transfer student persistence toward graduation through "the seamless transfer of academic credits" between participating Missouri institutions (Missouri Department of Higher Education and Workforce Development, n.d.). CORE 42 is a standardized general education curriculum comprising five knowledge areas: Humanities and Fine Arts, Mathematical Sciences, Natural Sciences, Oral and Written Communications, and Social and Behavioral Sciences. As of 2023, 37 institutions are a part of CORE 42, and over 2,000 courses are included in the general education curriculum (Missouri Department of Higher Education and Workforce Development, n.d.).

College transfer pathways allow students flexibility, access, and the opportunity to save money by transferring academic credits between institutions. Many students choose to save money by beginning college at a 2-year institution with the intent to later transfer to a 4-year institution. The College Board (2023) reports that community colleges' average annual tuition cost was $3,440, while the average 4-year institution costs in-state students $11,260 and out-of-state students $29,150. In the 2023-2024 school year, Missouri residents pay between $3,630 and $7,440 to attend 2-year institutions, while in-state tuition at 4-year institutions ranges from $6,808 to $34,229 annually (Missouri Department of Higher Education and Workforce

Development, 2023). Nationally, although more than half of community college students plan to complete their bachelor's degree at a 4-year institution, many do not (Horn & Weko, 2009). According to the National Student Clearinghouse (NSC), only 15% of students who start at 2-year colleges earn a bachelor's degree within six years of enrolling at their receiving institution (Shapiro et al., 2012). Students face many barriers to successfully transferring between institutions. Transfer students must often repeat courses that did not successfully transfer or inadvertently accumulate more credits than is necessary for graduation (Cullinane, 2014; Xu et al., 2018), requiring them to spend more time and money. Students who can transfer most of their credits are 2.5 times more likely to earn a bachelor's degree than students who transfer fewer than half of their credits (Jenkins & Fink, 2015).

Missouri is one of 31 states with a statewide articulation agreement (Education Commission of the States, 2022). While articulation agreements have been proven effective in promoting transfer (Anderson et al., 2006; Spencer, 2019), success rates for increasing degree efficiency (Roksa & Keith, 2008; Worsham et al., 2019) and improving degree attainment are mixed (Baker, 2016; Stern, 2016). Spencer (2019) posits that statewide articulation agreements can incentivize transfer, while Anderson, Sun, and Alfonso (2006) find that they do not. Roksa and Keith (2008) found that articulation agreements may prevent credit loss but do not necessarily improve graduation rates. A study by Stern (2016) found that articulation agreements increase bachelor's degree attainment rates but do not increase associate's degree attainment rates. Finally, Worsham et al. (2019) and Baker (2016) note that the effects of statewide articulation agreements take time and that their impact is often not felt until one to two years after implementation.

Research Aim

The MDHEWD seeks to understand the degree to which CORE 42 has satisfied the state's goal of supporting transfer student persistence toward graduation through the seamless transfer of academic credits. This research will inform how the MDHEWD can refine CORE 42 to serve Missouri students better and assist other states seeking to implement statewide articulation agreements.

Significance of the Study

In *Education Pays 2019: The Benefits of Higher Education for Individuals and Society*, Ma et al. (2019) report that individuals with advanced degrees are likelier to earn more money throughout their lifetime, lead healthier lives, and be engaged citizens than those without advanced degrees. However, bachelor's degree completion rates vary among different populations of students. Even though two-thirds of community college students in the United States anticipate transferring to a 4-year institution, most do not (Roska, 2011). Townsend (2008) notes that transfer students frequently have concerns about whether receiving institutions will accept previously earned credits. Whether students transfer from one 4-year institution to another or from a 2-year institution to a 4-year institution, they want to avoid credit loss, which can significantly impact timely degree attainment. Students intending to transfer are specifically susceptible to delayed college degree completion. Students often need individualized assistance to discern which college credits will transfer to their receiving institution, which can tax both the student and the institution. To help more college students realize the benefits of a bachelor's degree attainment, institutions and organizations must explore overarching policies that facilitate the successful completion of a college education.

College students' success in navigating transfer pathways depends on articulation agreements, the principal instrument outlining requirements for students to move between institutions. (Anderson et al., 2006). In *Articulation and Transfer: Definitions, Problems, and Solutions,* Wright et al. (1996) note, “Articulation refers to the range of processes and relationships involved in the systematic movement of students between and among post-secondary institutions” (p.6). Many institutions have developed approaches to address the challenge of reviewing courses and verifying content validity (Townsend, 2008). Unless a statewide articulation agreement exists, these agreements depend on the decisions of individual institutions. In *The Effects of Structured Transfer Pathways in Community Colleges,* Baker (2016) explores standardized statewide transfer agreements' prevalence and effectiveness. Baker (2016) finds that by 2011, 21 states had legislated a standardized statewide transfer agreement, and eight more states had implemented other robust interventions to improve college student transfer (Baker, 2016). In *The Effectiveness of Articulation and Transfer Agreements Between Missouri Community Colleges and Universities in Promoting the Successful Completion of a Four-Year Degree,* Perkins (2010) researched articulation agreements between institutions in Missouri. In comparing Missouri institutions, Perkins (2010) found that institutionally controlled factors influenced completion for the control and intervention groups studied, creating disparities in student outcomes based on institution. This research persuaded Missouri to renew its efforts to establish a statewide transfer curriculum, which led to the creation of CORE 42.

The goal of CORE 42 is to streamline the transfer of college credits, reduce the need to retake courses and help students earn a degree in less time and at less cost (Higher Education and Workforce Development, 2023). A preliminary interview with MDHEWD research analysts revealed that there are many key stakeholders invested in the success of CORE 42. The primary

stakeholder in the success of this initiative is college students intending to transfer to institutions in Missouri. The 37 institutions participating in CORE 42 are also critical stakeholders in its success, underscored by their continued involvement as representatives on the Core Curriculum Advisory Committee (CCAC), which oversees program efficacy. Beyond the CCAC university representatives, administrative stakeholders at participating institutions include university registrars, chief academic officers, and university presidents. Finally, as an initiative in response to a state policy, Missouri legislators have been involved in CORE 42 since its inception. Those legislators are also heavily invested in CORE 42's success, particularly given the time and state resources allocated to the policy and its implementation.

Research Questions

Roksa and Keith (2008) note that state transfer articulation policies aim to facilitate students' transitions across higher education institutions by preventing the loss of credits within specified parameters. The Vanderbilt research team seeks to understand CORE 42's statewide impact, including any changes to the number of credits students successfully transfer to receiving institutions. The research team seeks to answer these two questions:

1. To what extent did CORE 42 impact credit transfer to receiving institutions?
2. What are the perceptions of the impact of CORE 42?

Considerations

The research team acknowledges that the COVID-19 pandemic may impact the research results. The pandemic's far-reaching effects undoubtedly impacted Missouri's higher education enterprise and individual experiences and perceptions.

Chapter 2: Literature Review

Over 80% of community college students intend to earn at least a bachelor's degree, but only about a quarter transfer; only 20% earn an associate degree before transferring, and 17% continue to complete a bachelor's degree (Jenkins & Fink, 2015). Transfer students often find the transfer process complicated. It involves students deciding which institution to transfer to, completing the application, submitting transcripts, and researching which credits their receiving institution will accept (Townsend & Wilson, 2006). Townsend (2008) specifically noted the complexities of transfer credit evaluation:

> While first-time college students may be concerned about whether and how many of their dual enrollment or dual credit courses or advanced placement courses will be accepted, they took these courses before their college attendance. Transfer students, of course, are already college students who have earned course credits while in college. They want all these credits to transfer; otherwise, they believe their college tuition money and time have been wasted. (pg. 71)

Jenkins and Fink (2015) found that fewer than 60% of community college students transferred most of their credits, and about 15% transferred almost none of their credits. Credit loss had consequences for degree attainment. Students who transferred almost all their community college credits were 2.5 times more likely to earn a bachelor's degree than students who transferred fewer than half of their credits (Jenkins & Fink, 2015). A descriptive study from the National Student Clearinghouse found that students who vertically transferred with a certificate or 2-year degree were 16% likelier to earn a bachelor's degree than those without one. (Jenkins & Fink, 2015). Vertical transfer is when a student transfers from a 2-year or community college to a 4-year college, university, or bachelor's degree-awarding institution (Taylor & Jain, 2017).

Navigating transfer pathways depends on the articulation agreements between institutions, which negotiate the requirements for student movement from institution to institution (Anderson et al., 2006). These agreements ultimately determine the most feasible school choice for student persistence and graduation. At least eight states have implemented robust transfer interventions: associate degrees with set curricula for students intending to transfer to 4-year schools (Baker, 2016; Kisker, Wagoner, & Cohen, 2011). Giani (2019) noted significantly lower credit loss rates between 2-year and 4-year colleges, likely reflecting the impact of articulation agreements between these institutions.

Financial Implications of Transfer

Research shows significant economic value for students who begin their college careers at 2-year institutions. The Community College Research Center at Columbia University surveyed almost 203,000 students who started in a community college in the 2003-2004 academic year. Students who began at a 2-year institution and later transferred to a 4-year institution saved an estimated $943 million compared to if they had started at that same 4-year institution. In 2011, researchers estimated that students starting at a community college who later transferred to a 4-year public institution saved $1.9 billion, and students who transferred to a 4-year private institution saved $1.7 billion (Jenkins & Fink, 2015). Community college offers financial savings that entice many college students, particularly those undecided about their career path.

Even more financial advantages exist for those who complete their associate degree at a community college before transferring to a 4-year institution. In *The Economic Benefits of Attaining an Associate Degree Before Transfer: Evidence from North Carolina*, Belfield (2013) found that transferring from a 2-year institution to a 4-year institution produces strong economic returns for both students and taxpayers and that the economic benefits are greatest when the

transferring student earns their associate degree before they transfer. In *Should Community College Students Earn an Associate Degree Before Transferring to a Four-Year Institution*?, Crosta and Kopko (2014) found that transfer students who complete an associate's degree achieve higher education outcomes that are nearly ten percentage points higher than students who do not complete their associate's degree before transferring.

Some research denotes that the financial benefit of transfer depends on institutional context. The Center for Analysis and Postsecondary Education and Employment (CAPSEE) examined the benefits of transferring institutions. The study found that students who transferred to for-profit colleges experienced a smaller dip in earnings while attending college, likely because they worked more during college. That same study found that students earned 6–7% less over the five years following transfer than students who transferred to public or private nonprofit colleges (Liu & Belfield, 2014).

Students often accumulate excess and unnecessary college credits when transferring is difficult. Transfer student excess credit accumulation happens when a student's receiving institution does not accept the student's credits from their 2-year institution. Most bachelor's degree programs require 120 hours to complete, so any accumulation of excess credits adds to a student's tuition bill and often leads to greater overall student debt. Research shows that while some excess credit accumulation is common for a variety of first-time bachelor's degree-seeking students, it is more prevalent for some populations of students. Students particularly susceptible to excess credit accumulation are STEM majors, business majors, and transfers (Cullinane, 2014; Kilgore et al., 2019; Xu et al., 2018). Students who transfer with a technical or 2-year degree and choose specific rigorous academic programs will accrue more credits than their peers. For example, transfer business majors accrue an average of 41.3 excess credit hours, and transfer

STEM majors accrue 68.7 excess credit hours (Kilgore et al., 2019, p.42). Excess credit accumulation is expensive and wastes students' time. Statewide articulation agreements help make transfer processes more efficient and effective for individuals on a larger scale.

North Carolina is one state that has implemented a statewide articulation policy designed to reduce excess credit accumulation. In 2014, North Carolina revised the Comprehensive Articulation Agreement (CAA) to improve the transfer pathway between state community colleges and institutions in the University of North Carolina system. The articulation agreement included a set of general studies courses that were guaranteed to transfer to any UNC institution. The agreement also included guidelines that required transparency to assist students considering transfer. The agreement outlined that students who transferred to a UNC institution with their associate's degree were guaranteed 60 transferable credits (Worsham et al., 2021). The North Carolina transfer articulation agreement decreased credit accumulation by two to five credits. The average cost per credit hour for community colleges in Missouri is $172, and the average cost per credit hour for 4-year institutions is $290. Applying the example from North Carolina, an in-student could save $580 to $1,450 in tuition, and an out-of-state student could save $1,314 to $3,285 in tuition.

In 2010, California enacted state bill 1440: the Student Transfer Achievement Reform Act. This legislation developed a policy between community colleges and universities in the California State University system to support transfer students in the state. An intervention, "Associates Degree-to-Transfers," was designed to ensure transfer student success and reduce the likelihood of repeat coursework and excess credit accumulation (Baker, 2016). Before the bill, community college students who earned an associate degree were transferring with 20 excess credits, and those who earned a bachelor's degree were graduating with 42 excess credits

(California Community Colleges Chancellor's Office, 2010). Baker (2016) found that although the policy implementation took time, transfer students meeting the criteria could apply their transfer credits and earn their bachelor's degree with ten fewer hours on average than those who graduated before the bill's implementation. Applying this formula to Missouri, before the policy, transfer students with an associate degree were paying $3,440 in excess credits at the time of transfer and $6,380 by the time they graduated. The new policy would save Missouri students an average of ten credit hours and $2,900. Although the California policy at the time of the study did not eliminate excess credit accumulation, it saved students money and time.

Improved transfer pathways are financially helpful for individuals and have significant financial value for institutions. Inefficient transfer pathways recently became a fiscal consideration for many institutions when state legislators began decreasing higher education allocations for institutions based on their students' excess credit accumulation. Some states set a ceiling for the funding an institution can receive per excess credit; others penalize students who exceed a certain number of excess credits, and some states have stopped funding excess credit accumulation altogether (Kilgore et al., 2019). Institutions that invest in the success of their transfer students will reap the financial benefits of more efficient degree completion since completion rates impact state funding.

States also have an economic incentive to keep college students in-state after graduation. In *Despite Rising Costs, College Is Still A Good Investment*, Abel and Deitz (2019) outlined the economic benefits of college-educated citizens, thus highlighting the need for states to enact creative policies that can potentially retain their most ambitious citizens. Citizens with college degrees are more civically engaged and rely less on governmental programs than citizens without college degrees (Abel & Deitz, 2019). According to What Colleges Do for Local Economies: A

Direct Measure Based on Consumption, Rothwell (2015) noted that the average bachelor's degree holder contributes $278,000 more to local economies than the average high school graduate through direct spending throughout their lifetime; an associate degree holder contributes $81,000 more than a high school graduate" (para.1) In addition to contributions to local goods and services, bachelor's degree recipients will pay $44,000 more on local and state taxes in their lifetime than high school graduates and associate's degree recipients will pay $9,000 more on average. It is economically advantageous for states to play a role in creating policies that make it easier for students to transfer between institutions, ultimately improving state and regional economies.

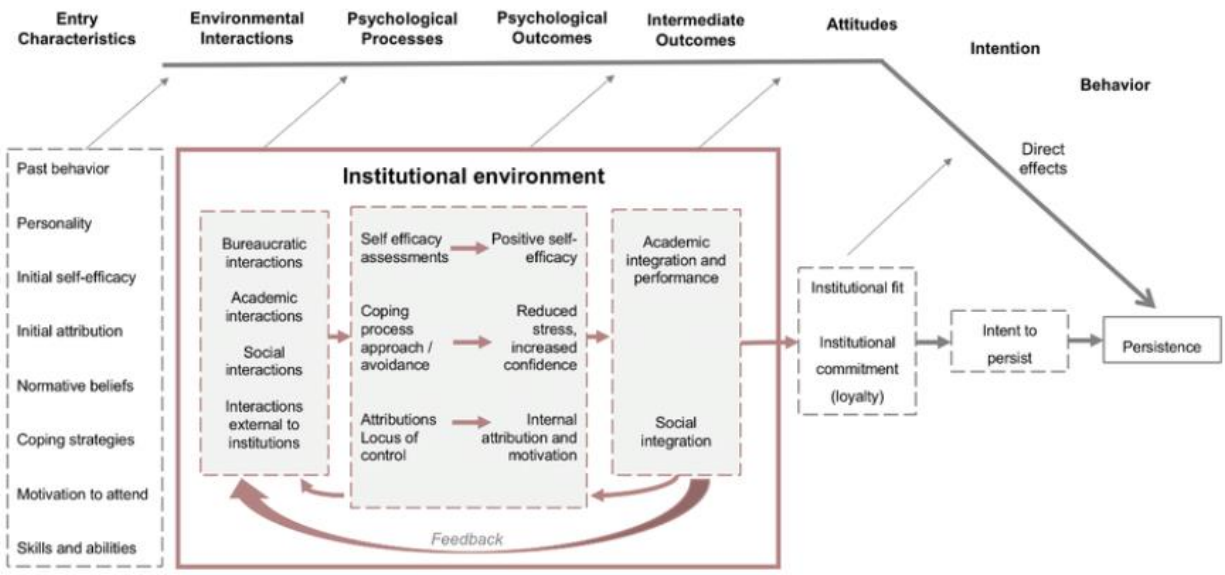
Conceptual Framework

The research team will use Bean and Eaton's (2000) psychological model of student departure to explain why students leave college. The model identifies five factors associated with student departure:

- pre-matriculation
- interactions with the institution and school and external environment
- attitudes about school experience
- intent to depart or persist
- the departure or retention of the student (Bean & Eaton, 2000)

The purpose of the model is to "describe the factors associated with leaving and the psychological activities associated with leaving" (Bean & Eaton, 2000, p. 49). Bean and Eaton (2000) noted that students come to college with complex personal characteristics that impact psychological processes due to interacting with their institutional environment. For the successful student, these processes include increased positive self-efficacy, reduced stress, and

an increased internal locus of control. Ideally, this combination of characteristics and institutional interactions leads to “academic and social integration, institutional fit, loyalty, intent to persist, and persistence itself” (Bean & Eaton, 2000, p. 58).



A psychological model of college student retention. Adapted from "The Psychology Underlying Successful Retention Practices" by J. Bean & S.B. Eaton, 2002, Journal of College Student Retention, 3(1), p. 76. Copyright 2001 SAGE Publications. Adapted with permission.

Chapter 3: Methodology

This chapter will discuss the rationale for research methods and strategies, describe the site, and outline contextual considerations. The qualitative methods will complement the quantitative findings to help the MDHEWD understand CORE 42's varied impacts on stakeholders across the state.

Site Description

Missouri is known for its diverse geography, ranging from the Ozark Mountains in the south to the plains in the north. Major cities include St. Louis, Kansas City, Springfield, and Columbia. According to the Census Bureau (2023), the state’s population was about 6.2 million

in 2023. About 81% of the population was white, 11% was Black or African American, about 5% was multiracial, and 3% were other races.

***Table 1**: Racial Makeup of Missouri Residents, Census 2023*

Race	Population	% of Population
White	4,930,466	80.28%
Black or African American	695,678	11.33%
American Indian and Alaska Native	19,904	0.32%
Asian	123,406	2.01%
Native Hawaiian and Other Pacific Islander	8,468	0.14%
Some other race	84,084	1.37%
Two or more races (multiracial)	279,528	4.55%
Total	6,141,534	100.00%

More than 569,000 students enroll in the state's 13 public four-year universities, 14 public two-year colleges, one public two-year technical college, 26 independent colleges and universities, and more than 150 proprietary and private career schools (Department of Higher Education and Workforce Development, 2023).). The MDHEWD is responsible for implementing the state's higher education goals. CORE 42 is an initiative housed in the MDHEWD, and the CCAC leads the ongoing implementation. The CCAC comprises representatives from the 37 institutions participating in CORE 42. The CCAC, whose membership evolves annually, convenes regularly to support CORE 42 for the thousands of Missouri faculty members, staff, administrators, students, high school counselors, and families annually impacted by the initiative.

Methods Rationale

The research team used a mixed-methods approach to understand the multidimensional impact of CORE 42 in Missouri. This approach will allow the team to analyze quantitative data about transfer credit accumulation rates while uncovering themes in the transfer student survey and CCAC interviews.

Research Strategies

The research team analyzed quantitative data provided by the MDHEWD to understand the impact of CORE 42 on credit transfer. The research team used a survey to understand transfer students' perceptions of the impact of CORE 42 in Missouri. The MDHEWD added the research team's questions to the state's annual cost affordability survey, which the state uses to understand students' financial situations, including how they pay for college and satisfy unmet need. The survey employed branching logic, allowing only students who had transferred or intended to transfer to see questions about CORE 42. Finally, the research team interviewed representatives of the Core Curriculum Advisory Committee (CCAC) to understand institutional perceptions of the impact of CORE 42.

MDHEWD Archival Data

Sample

The archival data collection analyzed the average credits transferred to the receiving 4-year institutions between 2016 and 2021. The Vanderbilt research team prepared the dataset provided by MDHEWD by reorganizing it by calendar year, determining which information was relevant to the study, and coding it for STATA SE input. The sample includes *39,807* degree-seeking transfer students who facilitated a first-time transfer to one of Missouri's 13 4-year public institutions. All students are in a degree-seeking status.

There are many types of transfer scenarios, including vertical transfers (2-year to 4-year), reverse transfers (4-year to 2-year), and lateral transfers (2-year to 2-year or 4-year to 4-year) (Giani, 2019). Roughly one-third of students who begin college at a public 2-year institution complete at least one transfer within five years of their initial enrollment, and students who begin their college career at a public 4-year institution have higher rates of transfer compared to students who begin at public 2-year colleges (Hossler et al., 2012). This study isolates students completing their first transfer from all 2-year and 4-year institutions in Missouri.

Table 2: *Frequency Counts and Percentages for Transfer Students by Cohort Classification. Total Population (N = 39,807)*

Classification	Frequency	Percentage	Cum.
Freshmen	5,970	15.00	15.00
Sophomore	13,450	33.79	48.79
Juniors	16,574	41.64	90.42
Seniors	3,813	9.58	100.00
Total	39,807	100.00	

Instruments and Design

The research team used an independent sample t-test to compare the difference in means of the two samples based on their year of transfer. The first student group, pre-CORE 42, were students who transferred between 2016 and 2018. The second group, post-CORE 42, were students who transferred between 2018 and 2021. The dependent variable was the average number of credit hours a receiving institution accepted for a first-time transfer. This continuous variable used numerical values ranging from 0 to 331. The transfer student dataset included these demographics: gender, race/ethnicity, academic standing, degree-seeking status, transfer student status, and Pell Grant eligibility.

Limitations

The research team analyzed data only from students who transferred between 2016 and 2021 at public institutions and did not analyze information from students categorized as first-time, continuing, readmitted, or unknown.

Transfer Student Survey

Sample

The total number of students who responded to the cost affordability survey administered by the MDHEWD was 4,814. 32% of those respondents (1,521) identified as transfer students or students who intended to transfer. The survey captured respondent characteristics, including gender, parents' level of education, and scholarship/grant recipient status.

Table 3: *Frequency Counts and Percentages for Transfer Students by Parents Education*

Parents Education	Frequency	Percentage
Higher Than Bachelors	174	11.4
Bachelors	325	21.3
Some College, No Degree	205	13.4
Vocational/Technical Degree	152	10
High School/GED	421	27.6
Less Than High School/GED	122	27.6
Don't Know	33	2.1
No Response	89	5.8
Total	1,521	100.00

Table 4: *Frequency Counts and Percentages for Transfer Students by Pell/Missouri Grant Eligibility*

Pell Grant/Missouri Grant Eligibility	Frequency	Percentage
Eligible	594	39
Not Eligible	927	60.9
Total	1,521	100.00

Table 5: *Frequency Counts and Percentages for Transfer Students by Gender*

Gender	Frequency	Percentage
Female	1,104	72.6
Male	288	18.9
Other	36	2.4
No Response	93	6.1
Total	1,521	100.00

Instruments and Design

The research team developed survey questions about the student perception of CORE 42 that the MDHEWD added to the cost affordability survey. In October 2023, research offices at Missouri institutions distributed the survey to their students, who had until December 2023 to complete it. The research team developed contingency tables to understand the relationship between specific categorical variables and CORE 42's impact on student persistence, easing the transfer student experience and the number of MOTR credits transferred.

1. **CORE 42 Helping Persistence** (dependent variable) Survey question five: *CORE 42 is helping me persist toward my degree.* For the responses in the survey, (0) No Response, (1) Agree, (2) Disagree, (3) Strongly Agree, (4) Strongly Disagree. The dependent variable was analyzed with the independent variable (Pell Grant eligibility), providing a binary for analysis in the contingency table. With this multiple choice, respondents selected the most accurate answer for their transfer experience.
2. **Ease of Transfer** (dependent variable) Survey Question six: *CORE 42 has made transferring to another college/university easier.* For the responses in the survey coding, (0) No Response, (1) Agree, (2) Disagree, (3) Strongly Agree, (4) Strongly Disagree. The dependent variable was analyzed with the independent variable (Pell Grant eligibility),

providing a binary for analysis in the contingency table. With this multiple choice, respondents selected the most accurate answer for their transfer experience.

3. **MOTR Specific Credits** (dependent variable) Survey Question nine: *How many academic credits beginning with MOTR (Missouri Transfer) were you able to transfer from your previous college/university?* For the responses in the survey coding, (0) No Response, (1) All Credits, (2) I don't know, (3) Some of my Credits, (4) Most of my credits. The dependent variable was analyzed with the independent variable (Pell Grant eligibility), providing a binary for analysis in the contingency table. With this multiple choice, respondents selected the most accurate answer for their transfer experience.

Limitations

The sample is limited to respondents who self-identified as transfer students or students intending to transfer. There is some information not captured on the MDHEWD cost affordability survey that may have improved the analysis of this study's results, like part-time or full-time student status. Finally, many respondents identified as transfer students or intended to transfer, but they did not answer the survey questions about CORE 42. For example, 82% of transfer students did not respond to "How many academic credits beginning with MOTR were you able to transfer from your previous college/university" 82% did not respond to "CORE 42 made transferring to another college/university easier", and 66% did not respond to "CORE 42 is helping me persist towards achieving my degree".

CCAC Interviews

To further understand the perceptions of the impact of CORE 42, the research team conducted 15 semi-structured interviews with CCAC members. The research team sought to understand institutional perceptions of CORE 42, including the degree to which colleges and

universities feel a sense of autonomy and if there have been noticeable changes to any course curricula. We also wanted to utilize the accessible sample size of interviews to explore their understanding of students' perceptions of CORE 42.

Sample

The MDHEWD provided a roster of CCAC members, and the research team chose a representative sample of proposed interviewees based on institution type, institution size, professional title, discipline, and knowledge area. If a proposed interviewee did not respond to outreach, the researcher contacted another CCAC member comparable by professional title and institutional type.

Instruments and Design

The research team developed an interview protocol to understand the impact of CORE 42. The first set of questions contextualized the CCAC members' responses by asking them about their institution and professional roles. The second set of questions helped the researchers explore the interviewees' understanding of the initial implementation of CORE 42. The final set of questions allowed the researchers to explore the CCAC members' understanding of the student and institutional perceptions of CORE 42. The research team used Zoom to transcribe all 15 interviews.

Limitations

The research team was limited to the CCAC members who agreed to participate, introducing the potential for voluntary response bias, meaning the sample will likely be highly opinionated. The researchers and the MDHEWD should interpret the results in this context.

Document Analysis

The research team reviewed relevant documents, including the CORE 42 Framework and Knowledge Area Competencies (Appendix D), the Missouri Higher Education Transfer Curriculum (Appendix E), and the CORE 42 Overview and FAQ (Appendix F). These documents helped the research team understand the MOTR course learning objectives and the intricacies of the state transfer process. The research team also reviewed the MDHEWD's CCAC roster [withheld] to explore the committee structure and choose a representative sample for the qualitative analysis.

Chapter 4: Results and Findings

MDHEWD Archival Data

The research team used an independent two-sample t-test to conduct a means comparison between two groups of Missouri transfer students. The independent variable was the two groups of students. The first student group, pre-CORE 42, were students who transferred between 2016 and 2018. The second group, post-CORE 42, were students who transferred between 2018 and 2021. The dependent variable was the average number of credit hours a receiving institution accepted for a first-time transfer. This variable was continuous, with numerical values ranging from 0 to 331. The research team hypothesized that there would be a difference in the average number of credits students transferred to their receiving institution when comparing the cohorts of students who transferred before and after the implementation of CORE 42.

Table 6: *Independent Two-Sample T-Test: Before and After CORE 42 Implementation*

	N	Mean	SD	SE	95% CI
Pre-CORE 42	21,319	56.29	28.71	.1966336	(55.90, 56.68)
Post-CORE 42	18,488	54.2	28.63	.2106039	(53.78, 54.61)
Combined	39,807	55.32	28.7	.14382	(55.04, 55.6)
					t=7.26 df=39805

Before CORE 42 was implemented (2016-2018), 21,319 students transferred an average of 56.29 credits to their receiving institutions. After implementing CORE 42, 18,488 students transferred an average of 54.20 credits. The difference in the means is 2.092 (t=7.259) with a 95% confidence interval. The critical value of t = +/- 1.96 and our calculated t value is + 7.29 and - 7.29. These results indicate a statistically significant difference between the number of credits Missouri students transferred before and after the implementation of CORE 42. Statistical significance indicates a meaningful change occurring between the two sample datasets.

In addition to implementing CORE 42 during this timeframe, it is important to consider other factors impacting credit accumulation. COVID-19 undoubtedly impacted the postsecondary landscape during this timeframe. In this timeframe, there was a decline in transfer enrollment based on the number of observations before CORE 42 (21,319) and after CORE 42 (18,488). According to the National Student Clearing House (2023), the average number of students transferring fell by 6.9% from fall 2020 to fall 2022. Transfer enrollment in Missouri fell by 1.7% in that same timeframe (NCES, 2022).

Transfer Student Survey

The research team used contingency tables to understand students' perceptions of CORE 42's impact on persistence toward graduation. The team used the Pearson chi-square statistic to help understand the relationship between the two variables in the survey questions. The research

team also looked to identify if there was a relationship between CORE 42's impact on persistence and Pell Grant eligibility.

Table 7: *Chi-square Test/Contingency Table: Pell Grant Recipients and CORE 42 Helping Persistence to Graduation*

	No Response	Agree	Disagree	Strongly Agree	Strongly Disagree	Total	p-value
Grant	369	128	35	59	3	594	
No Pell Grant	631	168	35	81	12	927	
Total	1,000	296	70	140	15	1,521	0.033

The chi-squared coefficient for the contingency table was 10.504 with 4 degrees of freedom. The p-value was 0.033, with an alpha level of 0.05. Further, the Chi-square observed was greater than or equal to the chi-square critical 9.49. There is an observable relationship between the transfer students' perception of their persistence toward graduation and the implementation of CORE 42 based on Pell Grant eligibility. The relationship between Pell Grant eligibility and perceptions about CORE 42 are directionally positive for both groups, indicating both believe CORE 42 is helping them persist to graduation. It is important to highlight the number of students who did not respond to this question specifically, which may demonstrate a lack of understanding about CORE 42 and the limited awareness among students. The research team hypothesizes that CORE 42 will gain more recognizability the longer it exists and with concerted efforts.

Table 8: *Chi-square Test/Contingency Table: Pell Grant Recipients and Ease of Transfer after CORE 42 Implementation*

	No Response	Agree	Disagree	Strongly Agree	Strongly Disagree	Total	p-value
Grant	478	64	13	37	2	594	
No Pell Grant	765	79	20	58	5	927	
Total	1,243	143	33	95	7	1,521	.0651

The research team utilized Pearson's chi-squared method to understand the perceptions of transfer students' ease of transfer. The chi-squared coefficient for the contingency table was

2.465 with 4 degrees of freedom. The p-value was 0.651, with an alpha level of 0.05. Further, the chi-square observed was not greater than or equal to the chi-square critical 9.49. There is no observable relationship between transfer students' perception of the ease of transfer and the implementation of CORE 42 based on Pell Grant eligibility. The perceived ease of transfer is not relational to scholarship recipient status. Though articulation agreements that define a transferable core may be the first step in defining pathways from two-year colleges to four-year colleges, students are still left facing a considerable amount of complexity when navigating degree plans, and articulation agreements are helpful but not alone sufficient for improving post-transfer success (Boatman & Soliz, 2018).

Table 9: *Chi-square Test/Contingency Table: Pell Grant Recipients and MOTR Credit Transfer*

	No Response	I Don't Know	None	Some	Most	All	Total	p-value
Grant	478	6	2	8	46	54	594	
No Pell Grant	770	12	1	19	56	69	927	
Total	1,248	18	3	27	46	54	1,521	.0381

The research team used Pearson's chi-squared method to understand the relationship between the number of MOTR credits transferred and Pell Grant eligibility. The contingency table's chi-squared coefficient was 5.2934, with 5 degrees of freedom. The p-value was 0.381, with an alpha level of 0.05. The chi-square observed was not equal to the critical 11.07. Thus, there was no observable relationship between the number of MOTR credits transferred based on Pell Grant eligibility.

Similarly to the other questions studied, many students did not respond to this question, possibly due to a lack of knowledge about the MOTR credits. Of the students who did respond, regardless of Pell Grant eligibility, many indicated they transferred all of their MOTR credits. An area for additional research and analysis could probe the responses related to "most" or "some "

of their MOTR courses transferred, which could be related to many factors. If the MOTR course number indicates a guaranteed transfer course, the data should reflect all students successfully transferring these general curriculum courses.

CCAC Interviews

The research team was interested in understanding the CCAC's perceptions of CORE 42's impact and how Missouri students and participating institutions experienced CORE 42. Interviewees shared that they had a limited perspective of CORE 42's implementation in the state, primarily due to their relatively recent appointments to the CCAC or general lack of knowledge of the statewide implementation process. The interviewees had little to no response to the subset of interview questions about student perceptions of CORE 42. Interviewees shared that this was because they either were unaware of significant student perceptions or were adamant that students did not understand CORE 42. Some interviewees shared the opinion that students do not need to understand CORE 42 for it to be effective; an associate professor at a 4-year public institution said:

> *My suspicion is that they [students] know very little about it [CORE 42] and care very little about it [CORE 42] unless they happen to look in the catalog. I don't know if we use it as a recruiting tool. I doubt that we do. We just don't do that.*

Most interviewees shared similar sentiments about their lack of knowledge of students' perceptions of CORE 42. The subset of interview questions about which the interviewees were most responsive was the section of questions asking them to reflect on the institutional perspectives of CORE 42. Thus, the primary themes emerging from CCAC interviews relate most to the institutional perceptions of CORE 42, as opposed to the student perceptions of CORE 42. The three themes that emerged from the 15 semi-structured interviews conducted with

members of the CCAC were institutional perspectives about the value of CORE 42, the impact of CORE 42 on institutional personnel, and the tension between CORE 42 and academic freedom.

Institutional Perspectives About the Value of CORE 42

The interviewees, regardless of institution type, communicated an understanding that the purpose of CORE 42 was to help students transfer between institutions in Missouri systematically. Many interviewees, however, shared skepticism that there was a need for the initiative in the state. The scant research supporting the conclusive effectiveness of state articulation agreements (Worsham, 2021) and the need for more information about the need for an agreement in Missouri may have led to these perceptions. The negative-leaning perceptions about CORE 42 were shared most emphatically by participants working at 4-year institutions. Several interviewees from 4-year institutions noted that they needed clarification on what data was used by state decision-makers to determine a need for a statewide articulation agreement. According to several CCAC members interviewed, this lack of data, or access to that data, makes it difficult to know if CORE 42 has been successful. An administrator at a 4-year institution shared:

> *From what I know, [before CORE 42] we never had a student appeal a decision to the state. I do know that the state legislature sees this [transfer] as a challenge. They thought this [transfer] was a problem. Has there been a reduction in those concerns or complaints?*

Similarly, a faculty member at a 4-year public institution said, *"In my opinion, this whole thing [CORE 42] is a solution in search of a problem.* When asked about the initial implementation of CORE 42 in the state, several interviewees from 4-year institutions discussed political pressure and subsequent legislation leading to the development of CORE 42. An associate professor at a

4-year institution said, *"I'm not trying to minimize what CORE 42 is, you know, it really stems from legislators. State legislators don't always know how things work, right? They think they're doing a good thing."* Another interviewee from a 4-year institution shared their perspective on the legislative intervention:

> *To me, it's ironic because, you know, in Missouri, we have a very Republican-dominated legislature, and generally philosophically, Republicans are very opposed to government interventions and red tape and bureaucracy, and then they impose a direct intervention and red tape and bureaucracy on to higher ed through CORE 42.*

Although representatives from 2-year institutions were more likely to speak positively about CORE 42, they noted that their assessment of its value was generally speculative and anecdotal. When asked if CORE 42 has increased the number of students who successfully transferred, a representative from a 2-year institution said:

> *I would say so. I think what it has helped do, without looking at the data, is help students focus on their degree programs. I think one of the ideas behind it was to prevent students from taking classes they don't need to take. So, I think in that sense, it has helped students take classes to help get them to their degree. I think broadly, you know, there are a lot of factors that go into student success and retention. But I do think that CORE 42 has helped because it's giving students a pathway to their degree. I think it's probably broadly had a positive impact overall.*

Another staff member from a 2-year institution said, *"It's been more painful for the 4-year universities than the 2 years because that's what we do - transfer. So, I think it's actually kind of benefitting 2-years because it's helped us focus on what we do best, which is transfer."* There was a marked distinction between how representatives from 4-year and 2-year institutions

talked about the value of CORE 42. Representatives from 2-year institutions were likelier to talk positively about CORE 42's impacts on easing transfer in Missouri. Representatives from 4-year institutions were more likely to talk about CORE 42's redundancy, noting that there were already successful articulation agreements between institutions in the state. When talking about their institution's participation in CORE 42, one representative of a 4-year institution said:

> *We partake in it [CORE 42]. We participate in it [CORE 42] according to the laws and regulations of the state. We are very good about accepting general transfer credit. We participate in at as good as anyone, we just don't submit that many courses to be evaluated as a part of CORE 42.*

The Impact of CORE 42 on Institutional Personnel

CORE 42 has had a notable impact on college and university personnel. Interviewees discussed the extra work CORE 42 requires of administrators, faculty, and staff across the state. The first pattern pertained to the CCAC's purpose and structure. Interviewees spoke about the need for more defined leadership within the committee and how that, coupled with a lack of structure, created challenges in coordinating the implementation of CORE 42 across the state. Existing literature on best practices demonstrates that 2-year and 4-year institutions should be equal partners when implementing articulation agreements, and faculty should be the primary decision-makers of articulation agreement transfer course selection (Ignash & Townsend, 2000; Montague, 2012). However, a gap exists within the literature on how to best lead articulation agreement committees.

When asked about the implementation from a statewide level, many members commented about a need for more defined leadership within the committee and tensions rising from various stakeholder priorities. Many interviewees shared that they felt institutions were

required to adapt to CORE 42 too quickly and were underprepared to do so effectively. One professor at a 2-year institution said:

> *The original construction of what was going to happen with CORE 42 was really developed at the state level, it seems entirely by the administration of the colleges and universities. It didn't seem to be driven by faculty, the original scaffold of CORE 42 with the different categories. I think that's created some challenges for the committee as we go forward.*

Without designated leadership, some committee members spoke to the lack of structure during meetings, sharing remarks like *"people with really strong personalities who have decided to put a lot of time and energy into this process kind of get to run the show"* and *"The committee has a few really strong opinions who, in my opinion, have pushed the committee far beyond its original purpose and intent."* Another member spoke about how the original committee composition left out important voices, sharing, *"We voiced our concerns to the state and said, the faculty are making some decisions but has anybody thought to consider like the advising perspective or thought to consider the registrar perspective?"*

As the committee developed more fully with the representation of registrars, tension existed between the priorities of 2-year and 4-year institutions. A chair at a public 4-year institution stated, *"It seems like the two-years are trying to drive it just for their needs. And you've got to look at the needs of all the constituents."* Another member shared how members can view policy changes differently depending on their institution's needs, stating, "*One positive is that because they have restricted the number of new courses that are being envisioned, we have fewer new courses that are going in. I'm not sure our community college partners would see that as a plus."*

The second pattern emerged as the importance of strong academic advising for transfer students. Committee members shared that students relied almost solely on their academic advisors to understand and communicate CORE 42 transfer policies and processes. This finding is consistent with existing literature noting that academic advising is essential to transfer student success (Fink & Jenkins, 2019; Hunt et al., 2009; Allen et al., 2014).

When questioned about implementing CORE 42 within institutions, committee members highlighted the importance of advisors understanding and communicating CORE 42 processes. When asked how students at their institution learn about CORE 42, almost all members answered with academic advisors. Committee members made comments such as, "*They also get it during the first year experience class, but then the rest of it is really going to be with their advisor*", and "*I always tell my students that it* [transfer awareness] *really goes to the advising session*" and "*I asked a student what they were going to take and they said 'I don't know. I'm just going to go ask my advisor.*" Some members reinforced the importance of advisors at their institution, sharing, "*Our advisors are really the ones on the frontlines…Those are your advocates*" and "*We call our advisors navigators, and they're the ones well-versed in CORE 42*." Some members even spoke to examples about how good advising can prevent students from making course selection mistakes due to differences between CORE 42 requirements and specific major requirements. One administrator at a public 4-year institution remarked, "*Engineering is a really clear area in that regard. Students, if they aren't well-advised, they would be taking courses that simply won't apply. It* [CORE 42] *wasn't built for that*."

Some committee members spoke about how the heavy reliance on advisors created vulnerability in the transfer process. One member, an instructor at a public 4-year institution, spoke about how this can create a lack of consistency in information-sharing, stating, "*Verbal is*

still the best form of communication, and with that, unfortunately, information can get skewed because there isn't a script to follow. And it's a personal interpretation of how it functions and what it means." A registrar at a public 2-year institution also shared, "*With faculty advisor changes, it is hard to let everyone understand changes in the degree audit system…We don't want students retaking courses or taking something they don't need*."

The third pattern that emerged was the reliance on institutions' registrars to successfully implement track CORE 42 courses within their individual course software systems. Members pointed to institutions depending on registrars to successfully implement the initiative within their school and retain knowledge to solve problems arising from discrepancies or nuances existing software could not. While existing research does not explicitly analyze registrar responsibilities, it does highlight the need to coordinate course curricula (LaSota & Zumeta, 2016), provide structured academic pathways (Smith & Miller, 2009), and create cross-institutional databases (Welsh & Kjorlien, 2001). Research also shows that a lack of infrastructure can contribute to ineffective statewide articulation agreements (Anderson, Sun, & Alfonso, 2006). This existing literature provided a helpful framework as we explored perceptions of CORE 42's implementation at institutions across Missouri.

Accompanying the need for strong academic advising, committee members spoke about the reliance on registrars to track and translate CORE 42 courses, making comments such as "*I am single-handedly doing it all." and* "*I wear multiple hats as registrar."* An interviewee from a private 4-year university remarked and elaborated:

> *I am meeting with the instructors making sure that we're already aligning. We have had to update courses because we had 15 CROs or something absurd. We wanted to condense*

> *those down for our class to make sure it aligns with best practices. And then we could also ensure that we're meeting those standards for CORE 42*.

Another registrar at a public 2-year shared that in addition to the work keeping up courses, they were responsible for coordinating with senior-level colleagues, sharing:

> *It required me to speak at faculty meetings, to have individual meetings with the cabinet with the President's administrative council to make sure that everybody was on board and understood why we needed to do it, and how we were going to do it*.

Faculty and administrators outside the registrar's office also underscored the additional effort of registrars to secure a reliable system for tracking CORE 42 within their courses. One member commented, "*This has been a chore on their [registrars'] end*."

Additionally, faculty and staff commented on the additional workload registrars assume due to the varying coding processes of course registration systems. A registrar at a public 4-year institution shared, "*It is a little hard with CORE 42 requirements to program our degree audit system. Sometimes there is a problem with the degree audit system. In the registrar's office, we look at it so often, we understand those nuances*." An instructor at a public 4-year remarked that for the CCAC to approve and add courses, each institution needs "*funding to be able to have the technology support of submitting, keeping the records accurate, and hearing from the registrars. That's the hard part - the SISs* [student information systems] *of how we implement them and how we transcript them.*"

Interviewees shared that CORE 42 needs more systemic structure and support to be successful. Interviewees noted that CORE 42 could only continue to be successful if its success did not solely rely on the individuals implementing it. Relying on individuals instead of processes is burdensome to staff and risky should those staff members leave. An administrator at

a 4-year institution said, *"The state has mandated this without any technology, it's absolutely absurd. We applaud [the MDHEWD] for managing this process, it's challenging, this is a manual process. It's a typed form. We absolutely have to solve this."*

The Tension Between CORE 42 and Academic Freedom

The third theme is the tension between CORE 42 and academic freedom. Academic freedom ensures that higher education professors and researchers can teach or publish findings "without interference from political figures, boards of trustees, donors, or other entities" (American Association of University Professors, 2023). Statewide articulation agreements require structure and standardization that could be antithetical to academic freedom's tenets. Interviewees in this study shared mixed perceptions about the impact of CORE 42 on course availability and student choice.

Almost entirely at 4-year institutions, CCAC members expressed concern that CORE 42 restricted course offerings and impacted course teaching. Members from 4-year institutions commented, *"It feels like we're being forced to fit our courses into a box*," and *"At the two years, if it isn't a part of CORE 42, no one is going to take it."* One interviewee from a 2-year institution said:

> *So, like in the spring, I'm teaching [specialized course]. We also have a class on [specialized topic], but outside of those two classes, everything else is CORE 42. Again, we try to offer a broad choice, and you do see students taking these [specialized courses], but they might get ten to 12 students, whereas your CORE 42 classes have 25. So, I think students know what it [CORE 42] is, and they are going to take the classes they know will transfer. I think students have a really good idea of what they need.*

However, some representatives from 2-year institutions shared that although a limitation in course offerings was an initial concern, it did not have that negative impact. One interviewee at a public 2-year shared, "*I think there was some initial concern that having this core group of classes might potentially limit student choice. Certain classes might die out because they're not in CORE 42, some certain elective courses might suffer*." However, they shared that special topics courses maintained their status in the course catalog and transferred under the new CORE 42 guidelines. Additionally, a registrar shared that CORE 42 increased students' transfer options at their institution:

> *I do think because there's such a wide variety of coursework that is accepted within CORE 42 that it has allowed students maybe to progress a little faster through that. Our previous Gen Studies was pretty tight. And now it's expanded to a lot more so there is flexibility within the existing curriculum.*

Interviewees shared that their institutions were actively conversing about which courses to offer and which should not be offered based on CORE 42 requirements. These anecdotes align with studies that show faculty consider course transferability when designing their classes (Sowl & Brown, 2021).

Interviewees described navigating institutional pressure to design academic programs to fit CORE 42 while advocating for specialized academic programs requiring additional prerequisite courses outside CORE 42. The interviewees shared that some programs at Missouri institutions may also require a separate application process before beginning program-specific courses. One administrator at a 4-year institution discussed the challenge CORE 42 has presented for some of their academic programs:

> *It's not practical, we have semester to semester map, to indicate clearly to students that need to transfer. There are very specialized programs. Nursing and engineering are really clear areas in that regard, those are the major programs, that could be a negative, students may not understand, it [CORE 42] was never build for that."*

Existing research suggests that some fields, such as political science, may naturally develop more consistent curricula across institutions (Gentry et al., 2016), while fields like engineering can have wide disparities within institution type (Grote et al., 2021). Those additional, nuanced requirements of specific academic programs often need to be clarified to students who think that because they have completed the CORE 42 curriculum, they should be able to begin classes at their receiving institution immediately. Members shared that students within these academic tracks might have to repeat coursework or take additional courses to fulfill their major requirements if they had solely focused their enrollment on transfer-approved MOTR courses. Literature on successful articulation agreements focuses on agreements for specific majors such as nursing (Spenser, 2008) or accounting (Montague, 2012). Calculated 2+2 agreements (Chen et al., 2012) prove successful; however, they can cause students to compare credit transfer and credit application to a major when selecting courses (Seine, 2016).

An administrator at a public 4-year institution shared, "*We have some really specific courses in certain areas that continue to be a challenge. I think about some of the humanities and arts courses*."

In addition to CORE 42's impact on specialty courses, some schools shared that the number of credit hours within CORE 42 altered the course options they could offer at their institution. An instructor at a public 4-year elaborated:

> *When CORE 42 was first passed, our provost told us we had to get down from 52 hours in the university studies program to the 42, so we immediately had to lop off 12 hours of 300 level courses. We had to take all of those artistic expression, literature and musical expression and make one large humanities category. We went from being able to offer all of these options but now students have this much wider array of choices.*

Additionally, aligning science courses was an initial concern, as the same course can be offered for a different number of credit hours in 2-year compared to 4-year institutions. As one professor at a public 2-year institution explains, the additional hour at her institution gives students more lecture time, which they feel necessary for community college students. She relayed that the original framework outlined, "*All chemistry should be three credits for the lecture portion. And there were quite a few of us who were like wait, please don't do that to us because our students would lose an hour compared to your students."* An administrator at a small public 4-year institution expressed that their science courses originally also went through a change to meet CORE 42 when their provost wanted to separate the lecture from the lab. They explained that their institution is "*just now fixing that and going back. It's not been the greatest experience for us and I know a couple of science faculty at 2-year institutions fought hard to keep their lecture labs."*

Chapter 5: Recommendations

After analyzing the accumulation of transfer credit data before and after CORE 42 implementation, the transfer student survey results, and CCAC interview themes, the research team has prepared recommendations for the MDHEWD. Employing these recommendations will further improve the transfer experience for Missouri college students. The contextual framework undergirding this study notes that college students enter an institution with psychological

attributes shaped by their experiences, abilities, and self-assessments (Bean & Eaton, 2000). Literature suggests that transfer students, specifically, possess or must cultivate in themselves the skills to navigate frequently cumbersome institutional transfer processes. The research team's recommendations focus on improving institutional processes to improve students' experiences moving through Missouri institutions. More effective and efficient matriculation processes will benefit both individual students and postsecondary institutions in Missouri, ultimately furthering the successes of CORE 42.

CORE 42 Recognizability

The transfer student survey results and interviews with the CCAC indicate that students need more awareness and understanding of CORE 42. The low response rate to CORE 42 questions on the transfer student survey indicates that students may not understand what CORE 42 is and, thus, cannot describe how it helped them transfer between institutions. Similarly, CCAC members at both 2-year and 4-year institutions shared doubts that students understood CORE 42. However, some also questioned if that recognizability mattered. CORE 42, at its most impactful, could be used to attract and retain Missouri citizens to the state's postsecondary system. If the MDHEWD sees CORE 42 as a postsecondary recruitment tool for the state, the research team believes the state could make improvements to help students understand it.

The research team recommends increasing efforts to publicize CORE 42, its successes, and its value to Missouri students before they decide what college they will attend. The MDHEWD should explore opportunities to increase students' exposure to CORE 42. Information about CORE 42 should be accessible, easy to understand, and incorporated into other existing pre-college experiences like standardized testing, guidance counseling, graduation fairs, and FAFSA application events. The department should ensure that state institutions have the

resources to effectively communicate the purpose of CORE 42 at recruitment and admissions events. The MDHEWD should also explore avenues to publicize the benefits of CORE 42 through adult education and community-based networks to reach students not attending college right out of high school.

Students' understanding of college pathways is vital to their success (Smith & Miller, 2009; Montague, 2012; Starobin et al., 2016; Mobley & Brawner, 2019; Laanan et al., 2010). Interviews with the CCAC members highlighted the importance of quality advising in relaying CORE 42 processes to students, and research confirms that advising is a pivotal component of transfer student success (Allen et al., 2014; Hood et al., 2009). However, the state must rely on more than individual advisors to explain the nuances of CORE 42. Increasing students' access to knowledge about CORE 42 can improve their self-determination and autonomy to reach their educational goals.

Ongoing Data Tracking

The research team recommends that the MDHEWD continually track data related to CORE 42 to improve both the ongoing impact of the initiative and its perception in the state. The state should continually track transfer credit accumulation rates to understand the impact of CORE 42 on the efficiency of credit accumulation, allowing the state to understand the longitudinal trends related to CORE 42. The state can utilize independent samples t-tests to compare the average number of credits students transfer to receiving institutions each year. For example, the MDHEWD can pull the average number of MOTR credits transferred in 2025 compared to the average number of credits transferred in 2024, controlling for institution-type first-time transfer student status. Determining the annual difference in means using the MOTR designation will reveal a directional trend for the state to analyze.

The research team also recommends that the MDHEWD annually include CORE 42 questions in the Missouri college affordability survey, allowing for a longitudinal analysis of responses. The state can continue to assess the recognizability of CORE by keeping these specific questions in the annual survey. Improving CORE 42 recognizability will ideally increase the number of students who connect their college success to the initiative's implementation. Analyzing the yearly responses to questions like "CORE 42 has made transferring to a college/university easier" and "How many academic credits beginning with MOTR were you able to transfer from your previous college/university?" will allow the state to understand trends in student perception along with quantitative credit accumulation trends.

Ongoing efforts to longitudinally track data will assist the state in telling the story of CORE 42 to its many constituents. As CORE 42 is early in its implementation, individual students need to learn more about it, and institutions need data to see its value. The MDHEWD must improve institutional stakeholders' perceptions of CORE 42 for the initiative to be successful. This study highlights the vast but mostly skeptical institutional perceptions of CORE 42. The institutional sample was limited to the current members of the CCAC. The MDHEWD should continue to solicit feedback from participating institutions to understand its impact more deeply on the people tasked with implementing the initiative in the state. Longitudinal data proving CORE 42's value will assist the state in improving perceptions of it.

Improved Technological Support

CCAC representatives were clear that CORE 42 needs more technological support to reduce the workload its implementation has caused faculty, staff, and administrators at Missouri institutions. CCAC representatives from both 2-year and 4-year institutions shared that implementing CORE 42 requires manual processes that need to be more efficient. Those manual

processes feel unnecessary without the data to know if a transfer problem previously existed in the state or if the efforts are leading to student success. Published best practices of articulation agreements reinforce the need for a cross-institutional database (Welsh, 2001; Welsh & Kjorlein, 2002; Anderson et al., 2006) and data-centric evaluation (Ignash & Townsend, 2000) as the bureaucracy of state-mandated articulation agreements can impede their intended results (Montague, 2012). The MDHEWD must invest in systematic and technological support to help ease the workload of individuals and help the state understand if CORE 42 is accomplishing its goals.

Access CCAC Structure, Processes, and Scope

The research team suggests that the MDHEWD access the structure, processes, and scope of the CCAC. Some CCAC members questioned whether the committee's scope had broadened beyond its original intent. Those members indicated that too much time was spent in sub-committees evaluating course content and design instead of determining if the submitted courses fit the CORE 42 curriculum. Some members also indicated that many 4-year institutions' representatives are frequently absent from CCAC meetings, limiting productive dialogue. Longstanding members of the CCAC shared the perception that the direction of CCAC meetings was often at the whim of the individual committee members' personalities or agendas. These perceptions potentially further the divide between 2-year and 4-year institutions in the state. The negative experiences of individuals serving on the CCAC may contribute to the generally negative institutional perceptions of CORE 42. Thus, the research team suggests that the MDHEWD conduct an ongoing assessment of CCAC members to understand the differences in experiences between representatives from 2-year and 4-year institutions.

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Appendix

Appendix A: Student Survey

1. Did you transfer to your current school, or do you plan to transfer to another institution in the future?
    a) Yes, I transferred from a Missouri institution to my current institution from:
        - [list of all CORE 42 college/universities]
    b) Yes, I plan to transfer in the future to the following institution:
        - [list of all CORE 42 college/universities]
    c) No, I have not transferred/or do not intend to transfer [SURVEY ENDS]
    d) I have transferred or intend to transfer, but not from/to a CORE 42 participating school [SURVEY ENDS]

2. I am on track to graduate _____

    a) in fewer than 4 years after first enrolling in college

    b) in 4 years from first enrolling in college

    c) between 4 - 6 years after enrolling in college

    d) more than 6 years after enrolling in college

    e) I'm not sure when I'm graduating

    f) I don't expect to graduate

3. How did you initially learn about CORE 42? (check all that apply)

    a) High school counselor
    b) Friends/family
    c) College recruiter
    d) Academic advisor (former college/university)
    e) Academic advisor (current college/university)
    f) Online
    g) Another way
    h) I do not know anything about CORE 42 [SURVEY ENDS]

4. I understand the purpose of CORE 42

    a) Strongly Agree
    b) Agree
    c) Disagree
    d) Strongly Disagree

5. CORE 42 is helping me persist towards achieving my degree

    a) Strongly Agree
    b) Agree
    c) Disagree
    d) Strongly Disagree

6. CORE 42 made transferring to a different college/university easier [Question appears only if 1A is answered yes]

    a) Strongly Agree
    b) Agree
    c) Disagree
    d) Strongly Disagree

7. My previous college/university helped me successfully transfer [Question appears only if 1A is answered yes]

    a) Strongly Agree
    b) Agree
    c) Disagree
    d) Strongly Disagree

8. My current college/university helped me successfully transfer [Question appears only if 1A is answered yes]

a) Strongly Agree
b) Agree
c) Disagree
d) Strongly Disagree

9. How many academic credits beginning with MOTR (Missouri Transfer) were you able to transfer from your previous college/university? [Question appears only if 1A is answered yes]

a) None
b) Some
c) Most
d) All
e) I Don't Know

10. I anticipate that CORE 42 will make transferring to a different college/university easier [Question appears only if 1B is answered yes]

a) Strongly Agree
b) Agree
c) Disagree
d) Strongly Disagree
e) I do not know anything about CORE 42

11. My current college/university is helping me successfully transfer [Question appears only if 1B is answered yes]

a) Strongly Agree
b) Agree
c) Disagree
d) Strongly Disagree

12. How many academic credits beginning with MOTR (Missouri Transfer) do you anticipate being able to transfer by the time you transfer from your current college/university? [Question appears only if 1B is answered yes]

a) None
b) Some
c) Most
d) All
e) I Don't Know

Appendix B: CCAC Interview Roster

Primary Position Type	Institution Type	Institution Size
Faculty	4-Year Public	< 5,000
Staff	4-Year Public	< 5,000
Staff	4-Year Public	5,000-15,000
Faculty	4-Year Public	5,000-15,000
Staff	4-Year Public	5,000-15,000
Staff	4-Year Public	< 5,000
Faculty	2-Year Public	< 5,000
Staff	2-Year Public	< 5,000
Faculty	2-Year Public	5,000-15,000
Faculty	2-Year Public	< 5,000
Faculty	2-Year Public	< 5,000
Faculty	2-Year Public	< 5,000
Staff	2-Year Public	< 5,000
Staff	Independent	< 5,000
Faculty	Independent	< 5,000

Appendix C: CCAC Interview Protocol

Question Type	Question
Institutional Information	Which best describes the interviewee's institution: • 4-year • 2-year Which best describes the interviewee's institution: • large (more than 15,000 total students) • mid-size (5,000 – 15,000 total students) • small (fewer than 5,000 total students) Which best describes the interviewee's institution: • public • private • independent
CCAC Member Information	What is your position at your institution? How long have you been in that position? How long have you served on the CCAC?
CORE 42 Implementation	Describe your understanding of CORE 42 implementation in Missouri. Has it been effective? Describe your understanding of CORE 42 implementation at your institution. Has it been effective? What other information would you like to share about the implementation of CORE 42?
CORE 42 Student Experience	Describe your understanding of how students at your institution initially learn about CORE 42. Describe how well students at your institution understand CORE 42. Describe your understanding of the student perception of CORE 42. Describe how the implementation of CORE 42 makes transferring institutions easier for students at your institution. Describe how the implementation of CORE 42 increases student retention at your institution. Describe how the implementation of CORE 42 increases student graduation rates at your institution. What other information would you like to share about students' perceptions of CORE 42?
CORE 42 Institutional Experience	Do you think institutional autonomy has been preserved at your institution following the implementation of CORE 42? Do you think the curriculum at your institution has remained the purview of the faculty following the implementation of CORE 42? What other information would you like to share about the impact of CORE 42 on your institution?
Wrap-Up	What other information would you like to share about your perception of CORE 42?

Appendix D: CORE 42 Framework and Knowledge Area Competencies

CORE 42 FRAMEWORK AND KNOWLEDGE AREA COMPETENCIES

The framework for Missouri's Core 42 is designed for students to obtain the basic competencies of *Valuing*, *Managing Information*, *Communicating*, and *Higher-Order Thinking* through the completion of at least 42-semester hours distributed across the broad Knowledge Areas of Communications, Humanities & Fine Arts, Natural & Mathematical Sciences, and Social & Behavioral Sciences.

CORE 42 FRAMEWORK COMPETENCIES

Valuing

Valuing is the ability to understand the moral and ethical values of a diverse society, and to understand that many courses of action are guided by value judgments about the way things ought to be. Students should recognize how values develop, how value judgments influence actions, and how informed decision-making can be improved through the consideration of personal values as well as the values of others. They should be able to make informed decisions through the identification of personal values and the values of others and through an understanding how such values develop. They should be able to analyze the ethical implications of choices made on the basis of these values.

After completing the CORE 42, students shall demonstrate the ability to

- develop an understand the moral and ethical values of a diverse society;
- develop the ability to analyze the ethical implications of actions and decisions;
- compare and contrast historical and cultural ethical perspectives and belief systems.
- utilize cultural, behavioral, and historical knowledge to clarify and articulate a personal value system.
- recognize the ramifications of one's value decisions on self and others.
- recognize conflicts within and between value systems and recognize and analyze ethical issues as they arise in a variety of contexts.
- consider multiple perspectives, recognize biases, deal with ambiguity, and take a reasonable position.

Managing Information

Managing Information is ability to locate, organize, store, retrieve, evaluate, synthesize, and annotate information from print, electronic, and other sources in preparation for solving problems and making informed decisions. Through the effective management of information, students should be able to design, evaluate, and implement a strategy to answer an open-ended question or achieve a desired goal.

After completing the CORE 42, students shall demonstrate the ability to

- locate, organize, store, retrieve, evaluate, synthesize, and annotate information from print, electronic, and other sources in preparation for solving problems and making informed decisions.
- access and generate information from a variety of sources, including the most contemporary technological information services.
- evaluate information for its currency, usefulness, truthfulness, and accuracy.
- organize, store, and retrieve information efficiently.
- reorganize information for an intended purpose, such as research projects.
- present information clearly and concisely, using traditional and contemporary technologies.

Communicating

Communicating, defined within the context of the Core 42 framework, is the ability to communicate effectively through oral, written, and digital channels using the English language and other symbol systems. Students should be able to communicate with thoughtfulness, clarity, and coherence; read and listen critically; and select and effectively use channels appropriate to the audience and message.

Written communication is the development and expression of ideas in writing. Written communication involves learning to work in many genres and styles. It can involve working with many different writing technologies, and mixing texts, data, and images. Written communication abilities develop through iterative experiences across the curriculum.

Oral communication focuses on how people engage in symbolic activity within and across various contexts. Oral communication takes many forms and may focus on developing meaning and understanding; increasing knowledge; enacting change; solving problems; and developing, maintaining, and transforming relationships; among other goals and outcomes.

After completing the CORE 42, students shall demonstrate the ability to

- analyze and evaluate their own and others' speaking and writing.
- conceive of writing as a recursive process that involves many strategies, including generating material, evaluating sources when used, drafting, revising, and editing.
- develop written work employing correct syntax, usage, grammar, and mechanics appropriate to one's audience and purpose.
- communicate effectively by engaging in symbolic activities relevant and appropriate to various purposes, audiences, relationships, groups, and contexts.

Higher Order Thinking

Higher Order Thinking is the development of students' ability to distinguish among opinions, facts, and inferences; to identify underlying or implicit assumptions; to make informed judgments; to solve problems by applying evaluative standards; and demonstrate the ability to reflect upon and refine those problem-solving skills. This involves creative thinking, critical thinking, and quantitative literacy.

Creative thinking is both the capacity to combine or synthesize existing ideas, images, or expertise in original ways and the experience of thinking, reacting, and working in an imaginative way characterized by a high degree of innovation, divergent thinking, and risk taking. Creative thinking, as it is fostered within higher education, must be distinguished from less focused types of creativity such as, for example, the creativity exhibited by a small child's drawing, which stems not from an understanding of connections, but from an ignorance of boundaries. While demonstrating solid knowledge of the domain's parameters, the creative thinker, at the highest levels of performance, pushes beyond those boundaries in new, unique, or atypical recombinations, uncovering or critically perceiving new syntheses and using or recognizing creative risk-taking to achieve a solution.

Critical thinking is a habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion. Critical thinking is transdisciplinary, and success in all disciplines requires habits of inquiry and analysis that share common attributes. Successful critical thinkers from all disciplines increasingly need to be able to apply those habits in various and changing situations encountered in all walks of life.

Quantitative Literacy (QL) is a "habit of mind" competency and comfort in working with numerical data. Individuals with strong QL skills possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations. They understand and can create sophisticated arguments supported by quantitative evidence and they can clearly communicate those arguments in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate).

After completing the CORE 42, students shall demonstrate the ability to

- recognize the problematic elements of presentations of information and argument and to formulate diagnostic questions for resolving issues and solving problems.
- use linguistic, mathematical or other symbolic approaches to describe problems, identify alternative solutions, and make reasoned choices among those solutions.
- analyze and synthesize information from a variety of sources and apply the results to resolving complex situations and problems.
- defend conclusions using relevant evidence and reasoned argument.
- reflect on and evaluate their critical-thinking processes.

CORE 42 KNOWLEDGE AREA GOALS AND COMPETENCIES

Social & Behavioral Sciences Knowledge Area

State-level Goal:

To develop students' understanding of themselves and the world around them through study of content and the processes used by historians and social and behavioral scientists to discover, describe, explain, and predict human behavior and social systems. Students acquire an understanding of the diversities and complexities of the cultural and social world, past and present, and come to an informed sense of self and others. As a part of this goal, institutions of higher education include a course of instruction in the Constitution of the United States and of the state of Missouri and in American history and institutions (Missouri Revised Statute 170.011.1).

Students will demonstrate the ability to

- explain social institutions, structures, and processes across a range of historical periods and cultures.
- develop and communicate hypothetical explanations for individual human behavior within the large-scale historical and social context.
- draw on history and the social sciences to evaluate contemporary problems.
- describe and analytically compare social, cultural, and historical settings and processes other than one's own.
- articulate the interconnectedness of people and places around the globe.
- describe and explain the constitutions of the United States and Missouri.

Communication Knowledge Area

Written Communication State-level Goal: To prepare students to communicate effectively with writing that exhibits solid construction resulting from satisfactory planning, discourse, and review. Students will engage in the writing process including drafting, editing, and revision for success in the classroom and workforce.

Students will demonstrate the ability to

- Express critical and analytical thought through reading and writing.

- Compose sound and effective sentences appropriate to one's audience and purpose.
- Compose unified, coherent, and developed paragraphs.
- Compose unified, coherent, and developed texts.
- Use a recursive writing process to develop strategies for generating, revising, editing, and proofreading texts.
- Produce rhetorically effective discourse for subject, audience, and purpose.
- Exhibit effective research and information literacy skills.

Oral Communication State-level Goal:
To prepare students to communicate effectively in a variety of contexts. Students will understand communication is symbolic, relational, collaborative, strategic, adaptive, and creative. They will recognize the role and importance of communication in developing meaning and understanding; increasing knowledge; enacting change; solving problems; and developing, maintaining, and transforming relationships; among other goals and outcomes.

Students will demonstrate the ability to

- Identify communication perspectives, principles, and concepts.
- Recognize the role and importance of communication given various purposes, audiences, relationships, groups, and contexts.
- Create and adapt messages relevant and appropriate to various purposes, audiences, relationships, groups, and contexts.
- Present messages effectively.
- Critically reflect on their own communication and the communication of others.

Natural Sciences Knowledge Area

State-level Goal:
To develop students' understanding of the principles and laboratory procedures of the natural sciences (Life and Physical) and to cultivate their abilities to apply the empirical methods of scientific inquiry. Students should understand how scientific discovery changes theoretical views of the world, informs our imaginations, and shapes human history. Students should also understand that science is shaped by historical and social contexts.

Students will demonstrate the ability to

- Explain how to use the scientific method and how to develop and test hypotheses in order to draw defensible conclusions.
- Evaluate scientific evidence and argument.
- Describe the basic principles of the natural world.
- Describe concepts of the nature, organization, and evolution of living systems.
- Explain how human interaction(s) affect living systems and the environment.

Mathematical Sciences Knowledge Area

State-level Goal:
To develop students' understanding of fundamental mathematical concepts and their applications. Students should develop a level of quantitative literacy that would enable them to make decisions and solve problems and which could serve as a basis for continued learning.

Students will demonstrate the ability to

- Describe contributions to society from the discipline of mathematics.

- Recognize and use connections within mathematics and between mathematics and other disciplines.
- Read, interpret, analyze, and synthesize quantitative data (e.g., graphs, tables, statistics, survey data) and make reasoned estimates.
- Formulate and use generalizations based upon pattern recognition.
- Apply and use mathematical models (e.g., algebraic, geometric, statistical) to solve problems.

Humanities and Fine Arts

State-level Goal:

To develop students' understanding of the ways in which humans have addressed their condition through imaginative work in the humanities and fine arts; to deepen their understanding of how that imaginative process is informed and limited by social, cultural, linguistic, and historical circumstances; and to appreciate the world of the creative imagination as a form of knowledge.

Students will demonstrate the ability to

- Describe the scope and variety of works in the humanities and fine arts (e.g., fine and performing arts, literature, speculative thought).
- Explain the historical, cultural, and social contexts of the humanities and fine arts.
- Identify the aesthetic standards used to make critical judgments in various artistic fields.
- Develop a plausible understanding of the differences and relationships between formal and popular culture.
- Articulate a response based upon aesthetic standards to observance of works in the humanities and fine arts.

Appendix E: Missouri Higher Education Core Curriculum and MOTR Courses

Missouri Higher Education Core Curriculum and MOTR Courses

OVERVIEW

The Missouri Higher Education Core Transfer Curriculum is a recommended lower-division core curriculum of at least forty-two semester credit hours. All public colleges and universities have adopted the Core Transfer Curriculum, which is commonly known as CORE 42.

CORE 42 is a statewide general education course of study intended to ensure that all graduates possess a common core of college-level skills and knowledge, and facilitate the transfer of those credits among Missouri's public institutions of higher education.

CORE 42 specifies the basic competencies and knowledge areas that all students completing degrees at a Missouri public institution of higher education must complete. CORE 42 is comprised of dozens of courses distributed across five knowledge areas. These courses are designated with a Missouri Transfer (MOTR) course number, which guarantees the one-to-one transfer of these courses among all Missouri public institutions of higher education.

For more information, click on https://dhe.mo.gov/.

CORE 42 Transfer Guidelines

Types of Transfer

1. Students who complete the Associate of Arts degree at a Missouri community college and transfers to a Missouri public university shall have completed all lower-division general education requirements at the receiving institution. Students shall receive full credit for all MOTR courses transferred, including any prerequisites or requirements in the major. The receiving institution cannot require the student take any additional lower-division general education courses. The student may, however, have to take additional lower-division courses to fulfill program or institutional requirements.

2. Students who complete the CORE 42 at any public institution shall be considered as having completed all lower-division general education requirements at a receiving institution. Students shall receive full credit for all MOTR courses transferred, including any prerequisites or requirements in the major. The receiving institution cannot require the student take any additional lower-division general education courses. The student may, however, have to take additional lower-division courses to fulfill program or institutional requirements.

3. Students who do not complete either the Associate of Arts or the CORE 42 shall receive credit at a receiving institution for each MOTR course completed at a sending institution. Students shall receive full credit for all MOTR courses transferred, including any prerequisites or requirements in the major. After receiving credit for MOTR courses, the student shall complete the CORE 42 at the receiving institution.

MOTR #	MOTR Name of Course	MCC	MCC Name of Course
Social & Behavioral Sciences & Civics			
9 credit hours including at least one American History course			
Social & Behavioral Sciences			
MOTR ANTH 101	General Anthropology	ANTH 100	General Anthropology
MOTR ANTH 201	Cultural Anthropology	ANTH 110	Cultural Anthropology
MOTR CRJS 101	Introduction to Criminal Justice	CRJU 101	Introduction to Criminal Justice
MOTR ECON 100	Introduction to Economics	ECON 110	Introduction to Economics
MOTR ECON 101	Introduction to Macroeconomics	ECON 210	Macroeconomics
MOTR ECON 102	Introduction to Microeconomics	ECON 211	Microeconomics
MOTR GEOG 101	World Regional Geography	GEOG 105	World Geography
MOTR GEOG 101	World Regional Geography	GEOG 113	Cultural/Human Geography
MOTR PSYC 100	General Psychology	PSYC 140	General Psychology
MOTR PSYC 200	Human Lifespan Development	PSYC 243	Human Lifespan Development
MOTR SBSC 100	Introduction to Mass Communications	COMM 112	Introduction to Mass Communication
MOTR SBSC 101	Introduction to Intercultural Communication	COMM 233	Intercultural Communication
MOTR SOCI 101	General Sociology	SOCI 160	Sociology
MOTR SOCI 201	Social Problems	SOCI 163	Contemporary Social Issues
MOTR URBN 202	Introduction to Urban Studies	SOCI 161	Urban Sociology
Civics (American Institutions)			
MOTR HIST 101	American History I	HIST 120	United States History to 1865
MOTR HIST 102	American History II	HIST 121	United States History since 1865
MOTR POSC 101	American Government	POLS 136	Introduction to American National Politics
MOTR POSC 201	International Relations	POLS 234	Intro to International Relations
Written Communications and Oral Communications			
9 credit hours (6 Written Communication & 3 Oral Communication)			
Oral Communication			
MOTR COMM 100	Introduction to Communications	COMM 102	Fundamentals of Human Communication
MOTR COMM 110	Fundamentals of Public Speaking	COMM 100	Fundamentals of Speech
MOTR COMM 120	Interpersonal Communication	COMM 223	Interpersonal Communication
MOTR COMM 125	Small Group Communication	COMM 204	Small Group Communication
MOTR COMM 220	Argumentation and Debate	COMM 110	Argumentation and Debate
Written Communication			
MOTR ENGL 100	Composition I	ENGL 101	Composition & Reading I
MOTR ENGL 110	Technical Writing	ENGL 215	Technical Writing
MOTR ENGL 200	Composition II	ENGL 102	Composition & Reading II
Mathematics			
3 credit hours			
MOTR MATH 110	Statistical Reasoning	MATH 115	Statistics
MOTR MATH 120	Mathematical Reasoning & Modeling	MATH 119	Mathematical Reasoning & Modeling
MOTR MATH 130	Pre-Calculus Algebra	MATH 120	College Algebra
MOTR MATH 150	Pre-Calculus	MATH 150	Pre-Calculus

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MOTR #	MOTR Name of Course	MCC	MCC Name of Course
Humanities & Fine Arts			
9 credit hours minimum from at least two disciplines			
Humanities			
MOTR FILM 100	Introduction to Film Studies	COMM 128	Introduction to Film
MOTR LITR 100	Introduction to Literature	ENGL 218	Introduction to Literature
MOTR LITR 100D	Introduction to Literature – Poetry/Drama	ENGL 216	Introduction to Drama and Poetry
MOTR LITR 100F	Introduction to Literature – Fiction	ENGL 214	Introduction to Fiction
MOTR LITR 101A	American Literature I	ENGL 222	American Literature to 1860
MOTR LITR 101B	American Literature II	ENGL 223	American Literature 1860-Present
MOTR LITR 102A	British Literature I	ENGL 220	British Literature to 1750
MOTR LITR 102B	British Literature II	ENGL 221	British Literature 1750-Present
MOTR LITR 105AA	Multicultural Literature – African American	ENGL 260	African American Literature
MOTR LITR 105L	Multicultural Literature – Latino/Latina	ENGL 264	U.S. Latino and Latina Literature
MOTR LITR 105NA	Multicultural Literature – Native American	ENGL 267	North American Indian Literature
MOTR LITR 106	Women's Literature	ENGL 268	Women's Literature
MOTR LITR 106	Women's Lives and Autobiography	ENGL 262	Women's Lives and Autobiography
MOTR LITR 200A	World Literature I	ENGL 254	World Literature I
MOTR LITR 200M	World Literature II	ENGL 255	World Literature II
MOTR LITR 201	Mythology	ENGL 240	Mythology
MOTR PHIL 100	Introduction to Philosophy	PHIL 100	Introduction to Philosophy
MOTR PHIL 101	Introduction to Logic	PHIL 148	Critical Thinking
MOTR PHIL 101	Introduction to Logic	PHIL 200	Logic
MOTR PHIL 102	Introduction to Ethics	PHIL 203	Ethics
MOTR WCIV 101	Western Civilization I	HIST 133	Foundations of Western Civilization
MOTR WCIV 102	Western Civilization II	HIST 134	Modern Western Civilization
Humanities Appreciation			
MOTR ARTS 100	Art Appreciation	ART 108	Survey of Art
MOTR ARTS 101	Art History I	ART 150	History of Art I
MOTR ARTS 102	Art History II	ART 151	History of Art II
MOTR LANG 101	French I	FREN 101	Elementary French I
MOTR LANG 102	French II	FREN 102	Elementary French II
MOTR LANG 103	Spanish I	SPAN 101	Elementary Spanish I
MOTR LANG 104	Spanish II	SPAN 102	Elementary Spanish II
MOTR LANG 105	Foreign Language I	SIGN 101	American Sign Language I
MOTR LANG 106	Foreign Language II	SIGN 102	American Sign Language II
MOTR LANG 105	Arabic I	ARAB 101	Elementary Modern Arabic I
MOTR LANG 106	Arabic II	ARAB 102	Elementary Modern Arabic II
MOTR LANG 105	Chinese I	CHIN 101	Elementary Chinese I
MOTR LANG 106	Chinese II	CHIN 102	Elementary Chinese II
MOTR LANG 105	German I	GERM 101	Elementary German I
MOTR LANG 106	German II	GERM 102	Elementary German II
MOTR MUSC 100	Music Appreciation	MUSI 108	Music Appreciation
MOTR MUSC 100J	Music Appreciation – Jazz	MUSI 116	Evolution of Jazz
MOTR MUSC 101	Music Fundamentals	MUSI 107	Fundamentals of Music
MOTR MUSC 102	World Music	MUSI 160	Music of the World's Cultures
MOTR PERF 100	Acting I	THEA 120	Acting I
MOTR PERF 102B	Music Performance – Band	MUSI 103	Concert Band I
MOTR PERF 102B	Music Performance – Band	MUSI 134	Jazz Band I
MOTR PERF 102C	Music Performance – Choir	MUSI 101	Choir I
MOTR PERF 102O	Music Performance – Orchestra	MUSI 105	Orchestra I
MOTR PERF 105C	Studio Art-Ceramics	ART 170	Ceramics I
MOTR PERF 105D	Introduction to Drawing	ART 110	Drawing I
MOTR PERF 105GA	Studio Art-Graphic Arts	GDES 110	Computers in Design I
MOTR PERF 105P	Studio Art-Painting	ART 220	Painting I
MOTR PERF 105S	Studio Art-Sculpture	ART 230	Sculpture I
MOTR PERF 106	Creative Writing	ENGL 201	Creative Writing
MOTR PERF 106D	Creative Writing – Dramatic Script	ENGL 209	Creative Writing – Screenwriting
MOTR RELG 100	World Religion	PHIL 101	Philosophy of Religion
MOTR THEA 100A	Theatre Appreciation	THEA 106	Theatre Appreciation
MOTR THEA 100B	Children's Theatre	THEA 116	Children's Theater

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MOTR #	MOTR Name of Course	MCC	MCC Name of Course
Natural Sciences			
7 credit hours minimum including one course with a lab component			
Lab Courses			
MOTR ASTR 100L	Astronomy with Lab	PHYS 106L	General Astronomy with Lab
MOTR BIOL 100L	Essentials in Human Biology with Lab (non-majors)	BIOL 101	General Biology
MOTR BIOL 100L	Essentials in Human Biology with Lab (non-majors)	BIOL 118	Introduction to Biology
MOTR BIOL 100LB	Essentials in Human Biology with Lab (non-majors)	BIOL 104	General Botany
MOTR BIOL 100LEV	Essentials in Human Biology with Lab (non-majors)	BIOL 102	Environmental Science
MOTR BIOL 100LZ	Essentials in Human Biology with Lab (non-majors)	BIOL 106	General Zoology
MOTR BIOL 150L	Biology with Lab	BIOL 123	General Biology for Majors
MOTR BIOL 100	Essentials in Biology	BIOL 125	Biology of Human Sexuality
MOTR CHEM 100L	Essentials in Chemistry with Lab	CHEM 101	Survey of Chemistry
MOTR CHEM 100L	Essentials in Chemistry with Lab	CHEM 107	Preparatory General Chemistry
MOTR CHEM 100LHP	Essentials in Chemistry with Lab	CHEM 105	Introductory Chemistry for Health Sciences
MOTR CHEM 150L	Chemistry I with Lab	CHEM 111	General College Chemistry I
MOTR GEOG 100	Physical Geography	GEOG 104	Principles of Physical Geography
MOTR GEOL 100L	Essentials in Geology with Lab	GEOL 101	Physical Geology
MOTR GEOL 100L	Essentials in Geology with Lab	GEOL 103	Environmental Geology
MOTR LIFS 100LA	Essentials in Human Biology with Lab	BIOL 110	Human Anatomy
MOTR LIFS 150LP	Human Biology with Lab	BIOL 210	Human Physiology
MOTR PHYS 100L	Essentials in Physics with Lab	PHYS 101L	Introductory Physics with Lab
MOTR PHYS 110L	Essentials in Physical Sciences with Lab (non-majors)	PHYS 104L	Foundations of Physical Science with Lab
MOTR PHYS 110LAS	Essentials in Physical Science with Lab	GEOG 110	Introduction to Meteorology
MOTR PHYS 110LEV	Essentials in Physical Sciences with Lab	GEOL 180	Energy & the Environment
MOTR PHYS 110LO	Essentials in Physical Sciences with Lab	GEOL 110	Oceanography
MOTR PHYS 150L	Basic Physics with Lab	PHYS 130	General Physics
MOTR PHYS 150L	Basics Physics with Lab	PHYS 112	Technical Physics
MOTR PHYS 200L	Physics with Lab	PHYS 220	Engineering Physics I
Non-Lab Courses			
MOTR ASTR 100	Astronomy	PHYS 106	General Astronomy
MOTR LIFS 100N	Essentials in Human Biology	BIOL 132	Human Nutrition
MOTR PHYS 100	Essentials in Physics	PHYS 101	Introductory Physics
MOTR PHYS 110	Essentials in Physical Sciences (non-majors)	PHYS 104	Foundations of Physical Science

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Appendix F: CORE 42 Overview and FAQ

Missouri Higher Education Core Curriculum Transfer Act

The Missouri Higher Education Core Transfer Curriculum is a recommended lower-division core curriculum of forty-two semester credit hours intended to facilitate student transfer among Missouri's public institutions of higher education. All public colleges and universities have adopted the Core Transfer Curriculum, which is commonly known as CORE 42.

CORE 42 is a statewide general education course of study intended to ensure that all graduates possess a common core of college-level skills and knowledge. CORE 42 specifies the basic competencies and knowledge areas that all students completing degrees at a Missouri public institution of higher education must complete. CORE 42 is comprised of dozens of courses distributed across five knowledge areas. These courses are designated with a Missouri Transfer (MOTR) course number, which guarantees the one-to-one transfer of these courses among all Missouri public institutions of higher education.

Types of Transfer

1. Students who complete the Associate of Arts degree at a Missouri community college and transfers to a Missouri public university shall have completed all lower-division general education requirements at the receiving institution. Students shall receive full credit, including any prerequisites or requirements in the major, for all MOTR courses transferred. The receiving institution cannot require the student take any additional lower-division general education courses. The student may, however, have to take additional lower-division courses to fulfill program or institutional requirements.

2. Students who complete the CORE 42 at any public institution shall be considered as having completed all lower-division general education requirements at a receiving institution. Students shall receive full credit, including any prerequisites or requirements in the major, for all MOTR courses transferred. The receiving institution cannot require the student take any additional lower-division general education courses. The student may, however, have to take additional lower-division courses to fulfill program or institutional requirements.

3. Students who do not complete either the Associate of Arts or the CORE 42 shall receive credit at a receiving institution for each MOTR course completed at a sending institution. Students shall receive full credit, including any prerequisites or requirements in the major, for all MOTR courses transferred. After receiving credit for MOTR courses, the student shall complete the CORE 42 at the receiving institution.

CORE 42

Content, Component Areas, and Objectives

General education is the curricular foundation of Missouri institutions of higher learning. It equips students with the intellectual tools, knowledge, and creative capabilities to engage in today's globally interconnected and rapidly changing world. Regardless of major, career plans, or personal goals, all Missouri graduates should excel in the essential skills of oral and written communication, critical thinking, information management and quantitative and qualitative analysis. Through general education, Missouri institutions foster student success in their specialized areas of study and toward rewarding lives as educated persons, active citizens, and effective contributors to their own prosperity and to the general welfare of the world in which they live.

The framework for Missouri's CORE 42 is designed for students to obtain the basic competencies of Valuing, Managing Information, Communicating, and Higher-Order Thinking through the completion of at least 42-semester hours distributed across the broad Knowledge Areas of Communications, Humanities & Fine Arts, Natural & Mathematical Sciences, and Social & Behavioral Sciences. The basic competencies are achieved through completion of the CORE 42 in its entirety.

CORE 42: Basic Competencies

Valuing

Valuing is the ability to understand the moral and ethical values of a diverse society, and to understand that many courses of action are guided by value judgments about the way things ought to be. Students should recognize how values develop, how value judgments influence actions, and how informed decision-making can be improved through the consideration of personal values as well as the values of others. They should be able to make informed decisions through the identification of personal values and the values of others and through an understanding how such values develop. They should be able to analyze the ethical implications of choices made on the basis of these values.

Managing Information

Managing Information is ability to locate, organize, store, retrieve, evaluate, synthesize, and annotate information from print, electronic, and other sources in preparation for solving problems and making informed decisions. Through the effective management of information, students should be able to design, evaluate, and implement a strategy to answer an open-ended question or achieve a desired goal.

Communicating

Communicating, defined within the context of the Core 42 framework, is the ability to communicate effectively through oral, written, and digital channels using the English language and other symbol systems. Students should be able to communicate with thoughtfulness, clarity, and coherence; read and listen critically; and select and effectively use channels appropriate to the audience and message.

Written communication is the development and expression of ideas in writing. Written communication involves learning to work in many genres and styles. It can involve working with many different writing technologies, and mixing texts, data, and images. Written communication abilities develop through iterative experiences across the curriculum.

Oral communication focuses on how people engage in symbolic activity within and across various contexts. Oral communication takes many forms and may focus on developing meaning and understanding; increasing knowledge; enacting change; solving problems; and developing, maintaining, and transforming relationships; among other goals and outcomes.

Higher Order Thinking

Higher Order Thinking is the development of students' ability to distinguish among opinions, facts, and inferences; to identify underlying or implicit assumptions; to make informed judgments; to solve problems by applying evaluative standards; and demonstrate the ability to reflect upon and refine those problem-solving skills. This involves creative thinking, critical thinking, and quantitative literacy.

Creative thinking is both the capacity to combine or synthesize existing ideas, images, or expertise in original ways and the experience of thinking, reacting, and working in an imaginative way characterized by a high degree of innovation, divergent thinking, and risk taking. Creative thinking, as it is fostered within higher education, must be distinguished from less focused types of creativity such as, for example, the creativity exhibited by a small child's drawing, which stems not from an understanding of connections, but from an ignorance of boundaries. While demonstrating solid knowledge of the domain's parameters, the creative thinker, at the highest levels of performance, pushes beyond those boundaries in new, unique, or atypical recombinations, uncovering or critically perceiving new syntheses and using or recognizing creative risk-taking to achieve a solution.

Critical thinking is a habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion. Critical thinking is transdisciplinary, and success in all disciplines requires habits of inquiry and analysis that share common attributes. Successful critical thinkers from all disciplines increasingly need to be able to apply those habits in various and changing situations encountered in all walks of life.

Quantitative Literacy (QL) is a "habit of mind," competency, and comfort in working with numerical data. Individuals with strong QL skills possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations. They understand and can create sophisticated arguments supported by quantitative evidence and they can clearly communicate those arguments in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate).

Objectives: Valuing

After completing the CORE 42, students shall demonstrate the ability to

- develop and understand the moral and ethical values of a diverse society;
- develop the ability to analyze the ethical implications of actions and decisions;
- compare and contrast historical and cultural ethical perspectives and belief systems.
- utilize cultural, behavioral, and historical knowledge to clarify and articulate a personal value system.

- recognize the ramifications of one's value decisions on self and others.
- recognize conflicts within and between value systems and recognize and analyze ethical issues as they arise in a variety of contexts.
- consider multiple perspectives, recognize biases, deal with ambiguity, and take a reasonable position.

Objectives: Managing Information

After completing the CORE 42, students shall demonstrate the ability to

- locate, organize, store, retrieve, evaluate, synthesize, and annotate information from print, electronic, and other sources in preparation for solving problems and making informed decisions.
- access and generate information from a variety of sources, including the most contemporary technological information services.
- evaluate information for its currency, usefulness, truthfulness, and accuracy.
- organize, store, and retrieve information efficiently.
- reorganize information for an intended purpose, such as research projects.
- present information clearly and concisely, using traditional and contemporary technologies.

Objectives: Communicating

After completing the CORE 42, students shall demonstrate the ability to

- analyze and evaluate their own and others' speaking and writing.
- conceive of writing as a recursive process that involves many strategies, including generating material, evaluating sources when used, drafting, revising, and editing.
- make formal written and oral presentations employing correct diction, syntax, usage, grammar, and mechanics.
- develop written work employing correct syntax, usage, grammar, and mechanics appropriate to one's audience and purpose.
- communicate effectively by engaging in symbolic activities relevant and appropriate to various purposes, audiences, relationships, groups, and contexts.

Objectives: Higher Order Thinking

After completing the CORE 42, students shall demonstrate the ability to

- recognize the problematic elements of presentations of information and argument and to formulate diagnostic questions for resolving issues and solving problems.
- use linguistic, mathematical or other symbolic approaches to describe problems, identify alternative solutions, and make reasoned choices among those solutions.
- analyze and synthesize information from a variety of sources and apply the results to resolving complex situations and problems.
- defend conclusions using relevant evidence and reasoned argument.
- reflect on and evaluate their critical-thinking processes.

CORE 42 Frequently Asked Questions

Below are questions and concerns MDHE staff has frequently heard regarding the CORE 42. By no means is this an exhaustive list of questions, and neither are the answers the last word on the subject. More questions will arise as the CORE 42 is implemented. We'll do our best to address your concerns, but many of these questions will be decided through conversations within the larger academic community.

1. What is the CORE 42?

The Core Curriculum (Core 42) is a framework for general education based upon a statement of the content, component (Knowledge Areas), and objectives of the core curriculum and included courses, and which all Missouri public higher education institutions have agreed to adopt. Upon a student's successful completion of the CORE 42 at any community college or public institution of higher education, that block of courses will be transferred to any other public institution of higher education in the state and shall be substituted for the receiving institution's general education requirement. Institution registrars will develop a process for clearly identifying on a student's transcript when they have completed the CORE 42 . Students will receive credit for having completed the general education requirement at the sending institution and will not be required to take any additional lower-division general education courses at the receiving institution.

For students who transfer before completing CORE 42 curriculum at the sending institution, they shall receive credit from the receiving institution for each of the courses identified as part of the CORE 42 (identified with "MOTR" prefix). The credit received for any individual course with a MOTR prefix shall not only fulfill the specific discipline-area within the CORE 42 framework, but will also fulfill any other requirements or pre-requisites that the course satisfies. For example, if a student were to take a psychology course with a MOTR prefix at the sending institution that also fulfills a major or pre-requisite requirement at the receiving institution, the sending institution's course will also meet those same requirements.

2. How was the CORE 42 developed?

SB 997 directed the Coordinating Board for Higher Education do develop a core curriculum with the assistance of an advisory committee comprised primarily of faculty. The Core Curriculum Advisory Committee (CCAC) included representatives from each public college and university.

The CCAC and MDHE staff developed a framework for the CORE 42 and identified courses to be considered as part of the core curriculum. Faculty Discipline Groups (FDGs), comprised of faculty from specific disciplines, reviewed course descriptions from each institution to determine which courses met the objectives of the CORE 42 course.

Throughout the process, the CCAC and MDHE staff engaged other faculty, chief academic officers, registrars and transfer coordinators, and chief executive officers.

3. Do Honors courses transfer?

Honors courses should transfer and fulfill requirements of the CORE 42. The decision to accept an Honors course as an Honors course will be at the discretion of the receiving institution.

4. SB 997 refers to "native" students and students enrolled in professional degree programs, both of whom are exempt from the provisions of the CORE 42. How will that work?

Native students are defined as students who have enrolled and attended only one institution and do not intend to transfer to another institution. For purposes of the CORE 42, students who earned dual credit while in high school will be considered native students. Per SB 997, the provisions of CORE 42 do not apply to native students.

Because of licensure or accreditation constraints, professional degree programs often have specific general education requirements. Students enrolled in such programs will take the recommended curriculum for their area of study.

As the CORE 42 is implemented, MDHE staff and the CCAC will work to develop clear pathways for students, including those enrolled in professional programs.

5. What does "at least 42 credit hours" mean?

As many of the courses included in the CORE 42 Framework are of varying credit hours lengths, it is nearly impossible to develop a course outline where the credits obtained equal exactly 42 credit hours. The "forty-two credit hour block" referred to in SB 997 is taken directly from the department's previous transfer policy that has been in effect since the mid-1990s. The previous policy did not delineate specific courses to be included in the framework, resulting in an infinite number of courses students could use to fulfill the requirements. By requiring the department to identify specific courses for equivalence, it created an additional task for managing courses of varying credit hour length (e.g. foreign language and sciences). The spirit of the law is to facilitate the seamless transfer of general education between institutions and reducing the need for students to "retake" coursework already completed at the sending institution.

6. What about students caught in the pipeline or the transitional phase of the core curriculum?

Credits accepted in transfer before August 1, 2018, will be determined by the receiving institution. Credits accepted August 1, 2018 and after will fall under the Core Curriculum Transfer Act.

7. **How are specific institutional requirements such as a PE credit requirement or an International credit requirement handled with the core curriculum?**

Specific institutional requirements are not included in the core curriculum. The only way specific institutional requirements would be able to be included in the core curriculum is if a class in the MTOR course library would work for the requirement.

8. How will appeals or disputes be handled?

The Committee on Transfer and Articulation is currently developing a detailed process for appeals, but the statute provides a clear framework. Per Senate Bill 997, if an institution of higher education does not accept course credit earned by a student at another public institution of higher education, that institution shall give written notice to the student and the other institution that the transfer of the course credit is denied. If the transfer dispute is not resolved to the satisfaction of the student or the institution at which the credit was earned within forty-five days after the date the student received written notice of the denial, the institution that denies the transfer of the course credit shall notify the commissioner of higher education of its denial and the reasons for the denial. The commissioner of higher education or his or her designee shall make the final determination about a dispute concerning the transfer of course credit and give written notice of the determination as to the involved student and institutions.

9. I'm a student. What do I do if an institution won't accept my courses in transfer?

The Core Curriculum is designed to work seamlessly between public institutions of higher education. If the receiving institution does not accept your courses in transfer, that institution must notify you and the sending institution that the transfer request has been denied. After this, the two institutions must work with you to settle any transfer disputes.

If the transfer dispute is not solved in a satisfactory manner, the receiving institution must notify the commissioner of higher education—within 45 days after the student received written notification that the transfer request was denied—must notify the commissioner that the request was denied and the reasons it was denied.
While this process will be used to settle disputes, MDHE will also be able to collect data on the kinds of disputes that occur, and to get a better idea of transfer practices in general; MDHE will use this data to identify bottlenecks and barriers to transfer and use this information to inform policy on transfer and articulation moving forward.

10. Will new courses be added to the CORE 42? How will that happen?

Yes. While a specific process has not been established, new courses can be suggested by institutions, followed by a review similar to what the Core Curriculum Advisory Committee (CCAC) has done throughout the initial round of course approvals. Faculty Discipline Groups (FDGs) will be utilized to evaluate courses to ensure they meet certain competencies and outcomes; institutional courses that meet these requirements will be approved and added to the core curriculum transfer library.

11. How do the new Math Pathways fit in the Core Curriculum?

The Math Pathways courses—Mathematical Reasoning & Modeling, Statistical Reasoning, Pre-Calculus Algebra, and Pre-Calculus—will fulfil the math requirement in the CORE 42.

12. A course at my institution has a different number of credit hours than the receiving institution? How will credit hour differences be handled in the CORE 42?

In some disciplines, particularly the sciences and foreign language, there are courses with three, four, and five credit hours proposed for equivalent transfer among institutions.

The Natural Sciences workgroup of the CCAC recommends 4 credit hours for all laboratory-based, lower-division general education MOTR science courses. This will require some institutions to adjust the credit hours assigned to laboratory-based, lower-division general education MOTR science courses.

The Humanities & Fine Arts workgroup of the CCAC recommends all MOTR foreign language courses carry 3 hours of transfer credit, with any additional credits hours applying as general credit toward the 42-hour minimum. There have been concerns raised about this approach, which the CCAC has not had a chance to resolve.

When a student fulfills the Core Curriculum at their sending institution, they will receive full credit at the receiving institution, regardless of the number of credit hours in equivalent classes at the receiving institution.

The Core Curriculum Advisory Committee will continue to study this issue, and will make recommendations for the standardization of credit hours in specific MOTR courses. Because this process needs further study, and significant time for implementation, standardized credit hours will not be required by the fall of 2018.

13. A student completed 12 credits in Humanities & Fine Arts, but the requirement is at least 9 credit hours. What happens to the other three credits?

Students have to complete a minimum of credits in each Knowledge Area. Credits earned beyond the minimum count toward the 42-hour minimum.

14. Does the civics requirement in CORE 42 fulfill the Missouri Higher Education Civics Achievement Examination from RSMo 170.013?

No. State statute requires any student entering a public institution of higher education for the first time after July 2019 who is pursuing an associate's or bachelor's degree from such institution shall successfully pass an examination on the provisions and principles of American civics with a score of seventy percent or greater as a condition of graduation from such institution. The civics requirement in CORE 42 states that nine credit hours minimum from at least two disciplines,

including at least one civics course are necessary to fulfill the Social & Behavioral Sciences knowledge area distribution requirement.