

# **COURSE SCHEDULING AND STUDENT LEARNING: AN EMPIRICAL INVESTIGATION**

**Kimberly Dunn**

*College of Business*  
*Florida Atlantic University*  
Boca Raton, Florida  
USA

**Karen Hooks**

*College of Business*  
*Florida Atlantic University*  
Boca Raton, Florida  
USA

## **ABSTRACT**

This study, exploring term length and class time of day on students' academic performance, was motivated by questions of whether (1) student learning differs in shorter terms, and (2) student learning differs in night classes. The purpose was to identify if differences exist that can inform pedagogy improvements for compressed terms and night classes.

Results show that final exam performance of Principles of Accounting I students in compressed terms is significantly better than those in traditional 16-week terms. Further, there was no difference in the performance of students in night and day classes. The results hold after controlling for factors expected to impact student performance and various demographics-based partitions of the sample. Results support effectiveness of night classes and short semesters for student learning in accounting classes. Relatively better performance by traditional-college-age students on comprehensive final exams during short semesters raises questions regarding students' long-term retention of accounting course content.

## **INTRODUCTION**

**H**igher education is expected to deliver content via time- and cost-efficient means while enhancing student learning. Shortened academic terms, typically in the form of summer terms and inter-sessions, are an accepted part of the culture at United States colleges and universities. In addition, night classes are an established part of course offerings. What impact does this have on the learning and academic success of accounting students? Information on comparative student performance may influence how accounting professors can best design and teach their

courses to positively impact students. Understanding the learning impacts of shortened semesters and night class scheduling options may be useful to accounting programs in accommodating students' scheduling needs and preferences.

Research that informs the topic of course scheduling ranges from cognitive psychology investigation of the lapse of time between and number of class sessions in an academic term (Carrington, 2010; Donovan and Radosevich, 1999) to applied studies that address, for example, the success of students in shortened nursing programs (Youssef and Goodrich, 1996). In the business area, and even more specifically, in accounting, research on the impact of schedules on student academic success is limited.

Published research indicates that many professors believe shortened semesters are likely to produce less effective learning (Daniel, 2000; Wolfe, 1998; Kanun et al., 1963). Disapproval stems from the notion that offering courses in a compressed time frame sacrifices effective learning for convenience. Yet, as early as 1963, education research began publishing findings of no difference in the learning experiences during shortened and regular-length semesters (Kanun et al., 1963).

Regarding the time of day at which classes are offered, the limited research that includes night classes is less useful than research on shortened terms because night class scheduling is often confounded in the research design of studies that investigate how frequently classes meet (for example, Hennebry, 1997). Among the topics addressed by research investigating class-meeting schedules is whether meeting more frequently in shorter class sessions produces better learning results than meeting less frequently in classes of longer duration per meeting. Night classes are often the "once a week," less frequent, longer duration classes used in this research. Thus, often, the research does not parse out whether its findings occur because a class meets less frequently for a longer duration or at night.

The purpose of this study is to add to the body of literature about scheduling and learning by exploring the impact of academic term length and time of day at which classes meet on the academic success of principles of accounting students. Data were collected over five semesters on 1,579 students completing the first accounting principles course.<sup>1</sup> The results indicate that students in the shortened semesters performed significantly better than those in the traditional 16-week semesters, and there was no significant difference in the performance of students in night and day classes. The results hold after controlling for factors expected to impact student performance. An additional finding is that traditional college-age students in six-week semesters outperform those in sixteen-week semesters on a comprehensive final exam, but these results do not hold for students over 25 years of age. This finding highlights the possibility of deficiencies in students' long term retention of accounting content and suggests the need for further research. The paper proceeds with a presentation of background literature, followed by methods used in the study, results, and a discussion of the findings.

## **BACKGROUND AND RESEARCH QUESTIONS**

Multiple research streams are important to understanding the impact of class scheduling on student performance. One important area is research addressing the length of academic terms and effectiveness of achieving learning objectives. In addition, research addressing the length of class

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<sup>1</sup>As discussed later in the paper, we also perform supplementary sensitivity analysis on an additional 1,052 observations that were collected in different semesters under slightly different conditions.

sessions and time between class meetings is relevant because full-length terms are likely composed of more class meetings of shorter duration while compressed terms likely have longer (and possibly fewer) class meetings. Finally, time of day research is related because night classes often meet only once a week with each session being of longer duration than daytime classes that meet multiple times per week.

Overall, research to date on class schedules and student performance has explored many variables and produced diverse and sometimes contradictory results. These research studies and their findings are discussed in the following sections.

### **Compressed Schedules**

Two types of compressed schedules exist in the academic environment (Bentley, 2006; Wlodkowski, 2003; Wlodkowski et al., 2001). One is when an entire program of study is shortened, generally with fewer hours of classroom or instruction exposure, typically called an accelerated program. The other occurs when the same number of course classroom hours is taught in a shortened time frame, called compressed time periods, compressed calendars and time-shortened courses. The accelerated programs most widely addressed in the published research literature are in nursing, where a predicted shortage of nurses has generated creative academic programming to increase the number of professionals graduating and entering the labor supply (Bentley, 2006; Youssef and Goodrich, 1996). Various studies support a finding that students in both accelerated programs and compressed-time-period classes attain the learning objectives established for the particular academic setting (Bentley, 2006; Wlodkowski et al., 2001; Wlodkowski and Westover, 1999; Williams, 1992; Kanun et al., 1963; Youssef and Goodrich, 1996). Time-shortened terms rather than accelerated programs is the focus of the current study.<sup>2</sup>

The origin of time-shortened courses is attributed to intensive language training by United States and British military during World War II. The intensive training was effective at producing skilled interpreters in a short time frame (Buzash, 1994). This success led to greater use of time-shortened courses, beyond just language-instruction settings. The next widespread use was in summer academic terms provided for teachers who were pursuing additional courses or credentials. Summer offerings for other subject disciplines, as well as winter and semester inter-session terms followed (Daniel, 2000).

Daniel (2000) provides a summary of research published through the 1990s on compressed and full-length terms. The research results are typically consistent in showing learning outcomes that are as good or better in the intensive formats as in the full-length terms. Subject areas in which compressed and full length terms have been researched include: accounting (Carrington, 2010), accounting and algebra (Caskey, 1994), British literature (Scott, 1995), earth science (Waechter, 1967), economics (Van Scyoc and Gleason, 1993), education (Lombardi et al., 1992; Boddy, 1986), educational philosophy (Brackenbury, 1987), educational research (Austin et al., 1988), French (Buzash, 1994), and psychology (Ray and Kirkpatrick, 1983). A study of economics students by Petrowsky (1996) presents a contradiction by finding that business students performed worse in a shortened versus a traditional-length semester. Although the cumulative message of prior studies

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<sup>2</sup>In the current study, student performance data collected in 6, 12 and 16 week semesters are analyzed. Although the 6 and 12 week semesters have approximately 10% fewer contact hours than the 16 week semesters, this is not sufficient to categorize them as accelerated courses. There was sufficient time to cover the same content in all three semester lengths.

is that compressed time frame courses can be effective, the research design of many of the studies, when considered individually, can be criticized (Daniel, 2000).

In a more recent study, Carrington (2010) analyzed the performance of 2,012 Intermediate Accounting students, including effects of compressed and traditional-length academic terms. Carrington (2010) was limited to investigating only accounting majors in two different upper level accounting courses. While the results were consistent with earlier studies finding no difference in course success for students in the compressed and regular terms, different courses and instructors are included in the analysis. In addition, the course offerings in Carrington (2010) confound the number of days between class meetings, duration of the course (i.e. number of weeks in term), and length of each course meeting.<sup>3</sup>

The goal of this study is to determine whether accounting-student learning differs in shorter terms after controlling for confounding factors not controlled in previous studies such as multiple courses, multiple instructors, and courses meeting a different number of days per week. The research design avoids many of the confounding variables included in prior research and allows for a more direct investigation of this research question.

**RQ 1:** Is there any difference in the success of accounting students in a compressed-schedule term and a traditional length term?

### **Spaced versus Massed Practice and Time of Day**

The theory of spaced or distributed versus massed practice is reported in cognitive psychology research. Generally stated, the theory proposes that for a given amount of instructional time, better learning is achieved through more rather than fewer classroom sessions, even if the actual amount of instruction time is the same.<sup>4</sup> The theory relates to compressed and traditional length semesters in that, for the same amount of instruction time, traditional length semesters would be theorized to allow for more instruction sessions, each of shorter duration, with time gaps in between and, as a result, better learning. A class that meets two or three times per week for a total of three hours (spaced practice), compared to the same class scheduled to meet for three hours only once per week in a single session (massed practice) exemplifies the differences addressed by this theory. The theory also has relevance when the focus is on student performance in night classes that typically meet once a week.

Even though, overall, spaced practice theory predicts improved learning from more class meetings with time between meetings, not all spaced practice research findings support this

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<sup>3</sup>As with Carrington (2010), research design issues include avoiding comparison of different courses, courses taught by different instructors, and courses meeting a different number of days per week. This concern is avoided in the current study by limiting the use of observations collected outside the primary sample of 1,579 (those obtained from other courses and instructors) to sensitivity analysis. All sections included in the current study's primary analysis were the same course, taught by the same instructor, and met twice per week. Consequently, differences between sections in the current study were time of day, duration of term, and length of each class meeting.

<sup>4</sup>The expectation of better learning as a result of spaced exposure to instruction contradicts most of the research on compressed terms discussed as background for RQ1. The contradiction is evident in that (1) compressed term research typically finds no difference in learning outcomes from short semesters, and (2) numerous studies performed over a period of years conclude better learning results from spaced instructional exposure (for example, Gallo and Odu, 2009; Krug et al., 1990; Reynolds and Glaser, 1964).

expectation. Some research finds that spaced practice produces improvements primarily for specific academic subjects (Donovan and Radosevich, 1999). Other studies find no differences or reversed results.

Both Hennebry (1997) and Carrington (2010) produced findings that were inconclusive or without clear explanation. Hennebry (1997) investigated student performance in different sections of a financial management course that met at night once a week and during the day twice and three times a week. Findings were mixed based on whether the analysis considered students who withdrew from the course. For students who completed the course, there were no differences in success based on the number of times the class met per week.<sup>5</sup> Carrington (2010) found that Intermediate Accounting night students with longer and less-frequently-meeting class sessions performed better than similar students meeting in 50-minute sessions, three times per week. She proposed as one explanation that the material content was too complex to be effectively presented in 50-minute sessions. Another possibility she proposed was that the longer break between night classes allowed students more time for out-of-class study of the material. Regardless of the reason, cognitive psychology theory of distributed practice would predict that day students meeting multiple times per week would outperform night students covering the same content in one session per week and Carrington's results contradict this expectation.

This study adds to the knowledge base regarding spaced versus massed practice and time of day class scheduling through its research design. For our time of day comparisons in full length (16 week) semesters, day and night classes met for the same number of minutes per class and the same number of class sessions per week. This research design allows for investigation of day versus night class sessions and student learning without the confounding influence of a spaced or massed practice effect.

**RQ 2:** Is there any difference in the success of accounting students who take the course in day and night time slots?

### **Predictors of Student Success**

Within the streams of research that provide background for this study, numerous variables have been investigated as possible predictors of differences in student performance. Among these are age, gender, and overall academic performance (Hennebry, 1997). Of these, overall academic performance tends to be consistent in its high predictive value of student performance in a specific class, with age and gender displaying mixed results (for example, see Carrington, 2010; Gallo and Odu, 2009; Caskey, 1994; Scott and Conrad, 1992). Although age and gender results are mixed, older learners often are found to perform better than their younger peers, and females to perform better academically than males.

## **RESEARCH METHOD**

### **Sample**

The sample for this study consists of students enrolled in Principles of Accounting I, which at the university where the study was conducted covers elementary-level financial accounting. Data

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<sup>5</sup>Given that Hennebry (1997) found different results based on how withdrawn students were treated in the analysis, the current study's analysis is performed both with and without withdrawn students, with no difference in results.

were collected over five consecutive semesters from all students completing the course, except those who were transient to the university at which the study was conducted.<sup>6</sup> The study site is a large public university in the southeast United States. Principles of Accounting I is a required course for all business majors.<sup>7</sup> The College of Business consisted of approximately 5,500 undergraduate students with slightly more females (53%) than males (47%). College of Business students ranged from 18 to over 60 years of age with approximately 60% under 25 years of age. The student population is ethnically diverse with reported proportions of approximately 20% Hispanic and 18% Black, not of Hispanic origin.

The study sample includes 1,579 students registered in eleven different sections. The format for the course consisted of a lecture segment with between 67 and 272 students registered for each lecture section and a lab segment with between 16 and 38 students registered for each lab section.

### Field Study Characteristics

The study reported here is a field study. As a consequence, all characteristics and influences cannot be controlled by the researchers. A potentially important limitation imposed by the field study research design is that the semesters under study were 6, 12 and 16 weeks long and fewer students were enrolled in the 6- and 12- than the 16-week length terms.<sup>8</sup> In addition, students self-selected into the courses that were offered during the sample period. Accordingly, the study does not control for any self-selection biases that are not captured by the control variables included in the analysis.<sup>9</sup> Even given the limitations of the field study format, the research design was intended to eliminate or minimize important alternative explanations for outcomes of the study.

A tenured associate professor with more than ten years of experience and above-average teaching evaluations taught all lecture sections and was responsible for all tests and grades providing, as nearly as possible, uniformity of instruction. Master of Accounting students from an honors program taught the lab sections under the direction of the professor who taught the lecture

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<sup>6</sup>A group of 207 transient students who took the course during the sample period were excluded from the study. Transient students are those who have a different home university and took the course for credit transfer back to the home university. These students are not included in the sample as they were not accepted to the study university and may be fundamentally different from the resident student population. Further, demographic and other data (e.g., GPA) required to complete the analysis were not available for transient students. Note that transient students are not community college transfer students. Community college transfer students are those who have completed some coursework at a community college prior to being accepted at the university at which this study was conducted.

<sup>7</sup>A sample-related limitation of the study is that the sample is from a single university in one geographic location and the generalizability of the results beyond that university is uncertain.

<sup>8</sup>As discussed in the Supplemental Analysis, class size is not significant.

<sup>9</sup>For example, it is possible that a student who chooses to take principles of accounting in the summer at night differs in some fundamental way from a student who chooses to take the course during the day in fall or spring. However, to minimize any impact on results, we collected data on and control for factors expected to be associated with student success (GPA, gender, age, part time and overload status, community college transfer status). Findings related to control variables are included in the discussion of results.

sessions.<sup>10</sup> Throughout the sample period, all lecture sessions met on Tuesday and all lab sessions met on Thursday. This consistent Tuesday-Thursday schedule allows for investigation of the variables of interest (length of the course and time of day) and student performance without confounding from differences in the frequency of meetings per week.

The textbook used and material covered were also held constant. The course content was uniform throughout the sample period. Exams were changed slightly each semester, but only to the extent necessary to maintain security.<sup>11</sup> Given the large class sizes, the professor did not personally know the students virtually eliminating the possibility of bias in the assignment of grades. As indicated in Table 1, the class start times were between 9:45 a.m. and 6:30 p.m. The total cumulative contact hours for each lecture-plus-lab combination were virtually identical (between 38 and 42 hours). In different terms, and, therefore, different sections of the course, there was variation of the length of class meetings and the number of weeks the classes met. The duration of a class period ranged from 80 to 190 minutes. The number of weeks in a term ranged from 6 to 16 weeks. The data used in the primary analysis of the study are institutional data, collected and maintained for university purposes, and not based on self-reported student information.<sup>12</sup>

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**TABLE 1**

**Schedule of Course Offerings**

<u>Term</u>	<u>Class Start Time</u>	<u>Class Duration (in minutes)</u>	<u>Duration of term (in weeks)</u>	<u>Total Lecture Contact Hours</u>	<u>Students Enrolled in Course</u>	<u>Students Included in Sample</u>
Spring	11:00 a.m.	80	16	21	272	252
Spring	5:30 p.m.	80	16	21	174	162
Summer	9:45 a.m.	190	6	19	132	94
Summer	6:30 p.m.	95	12	19	67	44
Fall	11:00 a.m.	80	16	21	199	185
Fall	3:30 p.m.	80	16	21	149	143
Fall	5:30 p.m.	80	16	21	96	89
Spring-2	11:00 a.m.	80	16	21	240	234
Spring-2	5:30 p.m.	80	16	21	205	188
Summer-2	9:45 a.m.	190	6	19	172	121
Summer-2	6:30 p.m.	95	12	19	80	67
<b>Total</b>					<u>1,786</u>	<u>1,579</u>

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<sup>10</sup>The professor trained the teaching assistants and met with them regularly to guide and provide feedback to create as uniform a learning experience across sections as possible.

<sup>11</sup>The professor was aware of the research study and made a conscious effort to maintain uniformity of materials, lectures, etc. across sections over the study time frame.

<sup>12</sup>The research was approved by the Institutional Review Board of the authors' university prior to any data collection and all requirements for protecting student identity and confidentiality were met. Self-reported data on students' outside time commitments are included in the Supplemental Analysis and reported in the Results section.

### Empirical Model

Our first research question is whether the duration of the course is associated with student performance. Our field study allowed us to investigate 6-, 12- and 16-week terms. We model student performance as a function of the duration of the course and other variables known to impact student performance. We specify our model for the first research question as:

$$\text{PERFORMANCE} = \alpha + \beta_1 \text{6WEEKS} + \beta_2 \text{12WEEKS} + \beta_3 \text{AGE} + \beta_4 \text{GENDER} + \beta_5 \text{PARTTIME} + \beta_6 \text{OVERLOAD} + \beta_7 \text{CC} + \beta_8 \text{GPA} + \varepsilon_k$$

Inclusion of the variables for age, gender, academic course load, whether the student transferred from a community college, and overall GPA are intended to control for other possible influences, as explained later.

To explore our second research question, whether the time of day of classes (day or night) is associated with student performance, we model student performance as a function of the time of day and other variables known to impact student performance. We do not include 6WEEK and 12WEEK variables in this model because when the course was taught in the 6-week term, the classes met only during the day, and when taught in the 12-week term, the classes met only at night.<sup>13</sup> We specify our model for the second research question as:

$$\text{PERFORMANCE} = \alpha + \beta_1 \text{DAY} + \beta_2 \text{AGE} + \beta_3 \text{GENDER} + \beta_4 \text{PARTTIME} + \beta_5 \text{OVERLOAD} + \beta_6 \text{CC} + \beta_7 \text{GPA} + \varepsilon_k$$

### Student Performance Measurement

The study uses final exam grade indicating student performance (PERFORMANCE) as the dependent variable. The final exam was administered during class and consisted of multiple-choice questions selected from the test bank provided by the textbook publisher. Final exams administered over the study period were all comprehensive and included fifty items.

### Course Characteristics

The variable of interest in our first research question is the duration of the course. To capture the duration of the course, the study includes two indicator variables. The first indicator variable, 6WEEKS, is equal to one if the student is taking the course in a six-week term and zero otherwise. The second indicator variable, 12WEEKS, is equal to one if the student is taking the course in a 12-week term and zero otherwise. A significant positive (negative) coefficient on 6WEEKS indicates that students in a 6-week term perform better (worse) than students in a 16-week term. A significant positive (negative) coefficient on 12WEEKS indicates that students in a 12-week term perform better (worse) than students in a 16-week term.

To address the second research question on student performance in day and night classes, in a separate regression, we include DAY in the model to capture whether the course is taught during the day or evening. DAY is an indicator variable equal to one if the course began before 5 p.m. and equal to zero otherwise. A significant positive (negative) coefficient on DAY indicates that students

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<sup>13</sup>We later provide supplemental analysis on subsets of the data to further examine the effects of time of day and duration of the course on student performance.

in sections beginning before 5 p.m. performed better (worse) than students in sections beginning after 5 p.m. As described more fully in the Supplemental Analysis section, the 6- and 16-week semesters included day classes and the 12- and 16-week semesters included night classes. The 6-week semester did not have night classes and the 12-week semester did not have day classes.

### Student Characteristics

As discussed previously, research has shown that age, gender, and prior academic performance affect student performance and, therefore, these variables are included here for RQ1 and RQ2. This study also includes variables not predominant in previous research that capture whether a student is taking more or less than a normal “full time” load (with consideration that a full time load in a shortened summer term is less than a full time load in a traditional 16-week term) and whether a student has transferred from a community college. In summary, the student characteristics variables included in the primary analysis for RQ1 and RQ2 are AGE, GENDER, PARTTIME, OVERLOAD, CC and GPA.

AGE is an indicator variable equal to one if the student is less than 25 years of age and equal to zero otherwise.<sup>14</sup> A significant positive (negative) coefficient on AGE indicates that students under 25 years of age performed better (worse) than students 25 years of age or older.<sup>15</sup> GENDER is an indicator variable equal to one if the student is female, and zero if the student is male. A significant positive (negative) coefficient on GENDER indicates that female students performed better (worse) than male students. PARTTIME is equal to one if the number of credit hours taken during the term is less than required for full-time status. Otherwise, PARTTIME is equal to zero. OVERLOAD is equal to one if the number of credit hours taken during the term is greater than full-time status. Otherwise, OVERLOAD is equal to zero.<sup>16</sup>

Intuitively, we suspect that the amount of time a student has available should impact academic performance. The ideal measure of available time captures not only academic time commitments, but also time commitments outside of school such as for job and family obligations. However, information on commitments outside of school requires self-reported data. The level of reliability that can be attributed to those data is unknown. Consequently, the primary analysis considers only the number of credit hours for which a student is registered while taking Principles of Accounting I by incorporating whether a student’s academic course load is classified as part time, full time or more. Self-reported student data on outside time commitments is included in the Supplemental Analysis.

The variable representing whether a student has transferred from a community college also derives from intuitive concerns and, although an admittedly imperfect measure, was intended to

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<sup>14</sup>Age 25 is frequently used as the dividing point between traditional age college students and adult learners (Wlodkowski et al., 2001; Wlodkowski, 2003).

<sup>15</sup>Regressions were also performed with age included as a continuous variable. The outcome produced similar results to those reported when age is used to develop categories of traditional and adult age learners. Consequently, only the categories of younger than 25 years and 25 years and older are reported in the remainder of the paper.

<sup>16</sup>PARTTIME and OVERLOAD are based on the credit hours required for full-time status. Full-time status for summer term is between six and twelve credit hours and full-time status for all other terms is between twelve and fifteen semester hours.

augment GPA as an indicator of academic performance.<sup>17</sup> GPA is, by nature, vulnerable to subjective influences. The community college transfer variable was intended to control for the possibility of any systematically different grading processes between two and four year colleges that might be embedded in the GPA variable.<sup>18</sup> CC is equal to one if the student transferred from a community college and equal to zero otherwise.

GPA is the student's grade point average (4.0 scale) on all coursework completed prior to taking Principles of Accounting I.

## RESULTS

### Descriptive Statistics

Means and standard deviations of the variables included in the analysis for the full sample and relevant subgroups are reported in Table 2. The final exam performance mean for the full sample is 59.92. The highest mean performance score is found for students who took the course in the 12-week terms with a final exam mean of 66.24.

**TABLE 2**

### Descriptive Statistics

	N	Mean (Standard Deviation)	
		GPA*	Final Exam
Full Sample	1,579	2.79 (0.52)	59.92 (23.87)
6 Week Terms	215	2.88 (0.56)	64.55 (22.21)
12 Week Terms	111	2.74 (0.49)	66.24 (19.95)
16 Week Terms	1,253	2.78 (0.49)	58.56 (24.28)
Daytime Classes	1,029	2.81 (0.54)	60.65 (22.40)
Night Classes	550	2.75 (0.49)	58.55 (26.36)
Adult Learners	195	2.76 (0.50)	60.94 (28.32)
Traditional Age	1,384	2.79 (0.52)	59.77 (23.18)
Males	865	2.72 (0.51)	60.06 (24.28)
Females	714	2.87 (0.51)	59.75 (23.37)
Part Time	239	2.70 (0.55)	59.39 (26.04)
Full Time	1,236	2.80 (0.51)	59.71 (23.60)
Overload	104	2.86 (0.56)	63.60 (21.62)
Community College Transfers	333	2.77 (0.46)	56.67 (26.20)

\* Scale = 1 to 4

<sup>17</sup>Other studies across a wide range of subject matter that address student performance have sometimes included variables such as standardized test scores (SAT, ACT) as additional indicators of student academic ability or performance. Since students in this study are at least college sophomores, pre-college standardized test scores were thought to be of uncertain relevance. The community college transfer status included in this study can be viewed as additional academic performance data, with a purpose parallel to that of SAT or ACT scores included in other studies. SAT scores are included in the supplemental analysis.

<sup>18</sup>At the study university, credits for courses taken at two-year colleges transfer in, and the overall GPA earned by a student while at a two-year college embeds in the student's four-year cumulative GPA.

Fewer students took the course during the summer terms with only 215 students (13% of the full sample) in the 6-week terms and 111 students (7% of the full sample) in the 12-week terms. The sample consisted of 1,029 students who took the course during the day (65%) and 550 who took the course at night (35%). Students were divided into 1,384 of traditional age (87%) and 195 adult learners (13%). The sample was nearly equally divided based on gender, with 714 females (45%) and 865 males (55%). Regarding course load, 1,236 students (78%) were in the full time category, 239 (15%) were part-time, and 104 (7%) were classified as having a course overload. Three hundred thirty three students (21%) had transferred from a community college.

The average GPA of the full sample was 2.79. The subgroups with the highest GPAs are the students taking the course in 6-week terms (GPA = 2.88) and females (GPA= 2.87).

Pearson correlation coefficients are reported in Table 3. As expected, a strong positive correlation exists between GPA and performance on the final exam. Being younger than 25 years of age is negatively correlated with transferring from a community college and part time status. Being female is positively correlated with part time status and GPA. Part time status is also positively correlated with community college transfer and negatively with GPA.

Regarding the scheduling variables of interest in this study, the strong correlations shown between the variable DAY and the variables 6WEEKS, positive, and 12WEEKS, negative, reflect the exclusive day and night course offerings in the six and twelve weeks terms, respectively. Being under 25 is negatively correlated with being in the 12-week term and positively associated with a daytime schedule. (These correlations are consistent since the 12-week term is only night classes.) A compressed 6- or 12-week term is positively associated with part time status, while a daytime schedule (which encompasses both 6- and 16- week terms is negatively associated with part time status. The 6-week term is also positively correlated with overload status. Community college transfer is positively associated with a 12-week term and negatively associated with a daytime schedule.

These correlations support including in the regressions, as controls, the variables representing student characteristics to effectively analyze the impact of term length and time of day on student performance.

### **Course Duration and Time of Day**

Consistent with Kealey et al. (2005), we performed OLS regression to investigate our RQ1 and RQ2.<sup>19</sup> Table 4 reports the regression results. For RQ1 addressing the number of weeks in a term, the coefficients are positive and significant for both 6WEEKS ( $\beta = 4.60$ ) and 12WEEKS ( $\beta = 8.20$ ). In other words, students who took Principles of Accounting I in a shortened term, either of a 6- or 12-week length, performed significantly better on their final exams than students who took the course in a 16-week term.

The regression model for RQ2 addressing the time of day at which a class meets includes the variable DAY and deletes the variables 6WEEKS and 12WEEKS. Again, this approach is used because the 12-week semester did not include day classes. Other variables remain the same. As shown in Table 4, the regression coefficient on DAY ( $\beta = 1.24$ ) is not statistically significant. Table 4, column 3 reports OLS regression results that further explore RQ2. When only data for the full

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<sup>19</sup>Given that our dependent variable is constrained between 0 and 100, we also replicated our analysis using a tobit regression model. The results were qualitatively unchanged.

**TABLE 3**

**Pearson Correlation Coefficients**

	<u>FINAL</u> <u>EXAM</u>	<u>6</u> <u>WEEKS</u>	<u>12</u> <u>WEEKS</u>	<u>DAY</u>	<u>AGE</u>	<u>GENDER</u>	<u>PARTTIME</u>	<u>OVERLOAD</u>	<u>CC</u>	<u>GPA</u>
FINAL EXAM	1.00	0.07***	0.07***	-0.04	-0.01*	-0.00	-0.00	0.04	-0.07***	0.36***
6WEEKS		1.00	-0.10***	0.29***	0.02	0.05**	0.13***	0.14***	0.02	0.06**
12WEEKS			1.00	-0.38***	-0.17***	0.00	0.13***	0.03	0.08***	-0.02
DAY				1.00	0.20***	-0.01	-0.14***	0.05**	-0.13***	0.05**
AGE					1.00	-0.05*	-0.26***	0.01	-0.35***	0.01
GENDER						1.00	0.09***	0.04	0.06**	0.14***
PARTTIME							1.00	-0.11***	0.15***	-0.07***
OVERLOAD								1.00	-0.03	0.03
CC									1.00	-0.02
GPA										1.00

\*, \*\*, \*\*\* <.10, <.05, and <.01, respectively

FINALEXAM = Points earned on final exam divided by all points available on the final exam multiplied by 100;

6WEEKS = 1 if course is taught in 6 weeks, 0 otherwise;

12WEEKS = 1 if course is taught in 12 weeks, 0 otherwise;

DAY = 1 if course is began before 5 p.m., 0 otherwise;

AGE = 1 is student is less than 25 years of age at the start of the course, 0 otherwise;

GENDER = 1 if student is female, 0 otherwise;

PARTTIME = 1 if student is taking less than a full-time course load, 0 otherwise;

OVERLOAD = 1 if student is taking more than a full-time course load, 0 otherwise;

CC = 1 if student transferred from a community college, 0 otherwise;

GPA = Student grade point average (on a 4.0 scale) immediately prior to taking principles of accounting.

**TABLE 4**

**Association Between Performance in Principles of Accounting and Course and Student Characteristics**

$$\text{PERFORMANCE} = \alpha + \beta_1 \text{6WEEKS} + \beta_2 \text{12WEEKS} + \beta_3 \text{AGE} + \beta_4 \text{GENDER} + \beta_5 \text{PARTTIME} + \beta_6 \text{OVERLOAD} + \beta_7 \text{CC} + \beta_8 \text{GPA} + \epsilon_k$$

$$\text{PERFORMANCE} = \alpha + \beta_1 \text{DAY} + \beta_2 \text{AGE} + \beta_3 \text{GENDER} + \beta_4 \text{PARTTIME} + \beta_5 \text{OVERLOAD} + \beta_6 \text{CC} + \beta_7 \text{GPA} + \epsilon_k$$

Variables	Course Duration (N = 1,579)		Time of Day (Full Sample) (N = 1,579)		Time of Day(Sixteen Week Classes Only) (N = 1,253)	
	Estimated Coefficient	t-statistic	Estimated Coefficient	t-statistic	Estimated Coefficient	t-statistic
Intercept	17.23***	4.8	17.71***	4.9	14.95***	3.5
6WEEKS	4.60***	2.7				
12WEEKS	8.20***	3.7				
DAY			1.24	1.0	2.09	1.5
AGE	-2.86	1.5	-3.68*	2.0	-4.09**	1.7
GENDER	-2.93***	2.6	-2.89**	2.5	-2.61**	2.0
PARTTIME	0.52	0.3	1.97	1.2	-0.09	0.0
OVERLOAD	1.59	0.7	2.88	1.3	0.85	0.3
CC	-4.79***	3.2	-4.52***	3.1	-5.50***	3.2
GPA	16.51***	15.3	16.60***	15.3	17.28***	13.7
Adj. R <sup>2</sup>	14.4%		13.5%		13.8%	
F-statistic	34.1***		36.1***		29.6***	

\*, \*\*, \*\*\* <.10, <.05, and <.01, respectively

- FINALEXAM = Points earned on final exam divided by all points available on the final exam multiplied by 100;
- 6WEEKS = 1 if course is taught in 6 weeks, 0 otherwise;
- 12WEEKS = 1 if course is taught in 12 weeks, 0 otherwise;
- DAY = 1 if course is began before 5 p.m., 0 otherwise;
- AGE = 1 is student is less than 25 years of age at the start of the course, 0 otherwise;
- GENDER = 1 if student is female, 0 otherwise;
- PARTTIME = 1 if student is taking less than a full-time course load, 0 otherwise;
- OVERLOAD = 1 if student is taking more than a full-time course load, 0 otherwise;
- CC = 1 if student transferred from a community college, 0 otherwise;
- GPA = Student grade point average (on a 4.0 scale) immediately prior to taking principles of accounting.

length (16 week) terms are analyzed, the regression coefficient on DAY ( $\beta = 2.09$ ) is again not statistically significant. This provides no evidence of any differences in the performance of Principles of Accounting I students in day or night classes, after controlling for other factors.<sup>20</sup>

### Control Variables

The regression analyses of the full sample addressing RQ1 and RQ2 also provide information on the control variables. Results are shown in Table 4. Specific importance of control variables as related to the two research questions is also explained further in the next section on Supplemental Analysis.

As expected, the coefficients for GPA ( $\beta = 16.51$ ,  $\beta = 16.60$  and  $\beta = 17.28$ ) are positive and significant. Thus, students with higher GPAs going into Principles of Accounting I complete the course with higher final exam grades.<sup>21</sup>

The coefficients for GENDER ( $\beta = -2.93$ ,  $\beta = -2.89$  and  $\beta = -2.61$ ) and CC ( $\beta = -4.79$ ,  $\beta = -4.52$  and  $\beta = -5.50$ ) are negative and significant. This means that females and those who had transferred from a community college did not perform as well on the final exam as males and those with only a four-year college history. AGE ( $\beta = -2.86$ ,  $\beta = -3.68$  and  $\beta = -4.09$ ) is negative and significant only in the analysis examining day versus night students with results (shown in Table 4, columns 2 and 3) indicating students 25 years of age and older outperformed younger students.

The overall regression result on GENDER indicates that, in this sample, male students perform better than female students after controlling for other factors. As presented earlier, prior research results, although mixed, have often shown that female students outperform or perform no worse than their male counterparts. Consequently, the differing result in this study triggered further analysis. Univariate analysis (not tabulated) indicates that performance of female and male students in this sample is not significantly different.<sup>22</sup> Our other results of gender analysis are also mixed and preclude meaningful interpretation. We believe the mixed research results, including ours, justify ongoing research monitoring of gender and accounting student performance.

The coefficients on PARTTIME ( $\beta = 0.52$ ,  $\beta = 1.97$  and  $\beta = -0.09$ ) and OVERLOAD ( $\beta = 1.59$ ,  $\beta = 2.88$  and  $\beta = 0.85$ ) are not significant at conventional levels, providing no evidence that a student's overall course load influences performance.

### Supplemental Analysis

To further analyze the data, we estimate OLS regression results on subsets of the primary sample and additional data. These regression results are reported in Tables 5-7.

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<sup>20</sup>A finding of no significance brings the power of the tests into question. To address this concern, we calculated the power of model (1) and model (2). Both models are deemed to have sufficient power (greater than .90) to detect actual differences. We also perform diagnostics to address concerns related to correlation among the independent variables. This analysis does not indicate a problem with multicollinearity in the regression analysis as all Variance Inflation Factors are less than 2.3.

<sup>21</sup>In addition, supplemental regression analysis with subsamples determined by median GPA provide results which are qualitatively similar to those provided in Table 4.

<sup>22</sup>A statistically significant correlation (Pearson correlation coefficient = 0.143;  $p=0.01$ ), as can be seen in Table 3, exists between GENDER and GPA; however, diagnostics do not indicate a problem with multicollinearity as all Variance Inflation Factors are less than 2.3.

**TABLE 5**

**Association Between Performance in Principles of Accounting and Course and Student Characteristics for Adult Learners and Traditional Age Learners**

$$\text{PERFORMANCE} = \alpha + \beta_1 \text{6WEEKS} + \beta_2 \text{12WEEKS} + \beta_3 \text{GENDER} + \beta_4 \text{PARTTIME} + \beta_5 \text{OVERLOAD} + \beta_6 \text{CC} + \beta_7 \text{GPA} + \epsilon_k$$

Variables (N=195)	Adult Learners (N=195)		Traditional Age Students (N=1,384)	
	Estimated Coefficient	t-statistic	Estimated Coefficient	t-statistic
Intercept	-4.45	0.4	17.63***	5.5
6WEEKS	3.00	0.5	5.09***	2.9
12WEEKS	9.35**	2.1	8.68***	3.3
GENDER	-8.24**	2.4	-2.08*	1.7
PARTTIME	8.41**	2.3	-2.47	1.3
OVERLOAD	-3.38	0.4	2.38	1.0
CC	-13.65***	3.8	-2.56	1.6
GPA	26.20***	7.5	15.16***	13.5
Adj. R <sup>2</sup>	28.7%		12.8%	
F-statistic	12.2 ***		30.1 ***	

\*, \*\*, \*\*\* <.10, <.05, and <.01, respectively

- FINALEXAM = Points earned on final exam divided by all points available on the final exam multiplied by 100;
- 6WEEKS = 1 if course is taught in 6 weeks, 0 otherwise;
- 12WEEKS = 1 if course is taught in 12 weeks, 0 otherwise;
- GENDER = 1 if student is female, 0 otherwise;
- PARTTIME = 1 if student is taking less than a full-time course load, 0 otherwise;
- OVERLOAD = 1 if student is taking more than a full-time course load, 0 otherwise;
- CC = 1 if student transferred from a community college, 0 otherwise;
- GPA = Student grade point average (on a 4.0 scale) immediately prior to taking principles of accounting.

*Adult and traditional age learners.* Learning-environment related performance differences between adult- and traditional-age learners continues to be of interest because of prior research outcomes.<sup>23</sup> Accordingly, the effects of duration of the course, the topic of interest in RQ1, may differ for the two student age groups. To explore for effects of variables that differ with age, we include separate analysis for adult learners (over 25 years of age) and traditional age students (25 years of age and under). As reported in Table 5, the results for adult learners diverge from the full sample in two

<sup>23</sup>Specifically, as relates to accounting students, Carrington (2010) found that traditional age Intermediate Accounting students performed worse with a 3-day per week class meeting schedule.

ways. One divergence is no difference in final exam performance of adult learners in the 6- and 16-week terms. Adult learners in the 6-week term do not perform better on the final exam than adult learners in the 16-week term ( $\beta = 3.00$ ). The second divergence is that for adult learners the coefficient on PARTTIME ( $\beta = 8.41$ ) is positive and significant. This suggests that adult learners taking a part-time course load outperform adult learners with a fulltime course load. This outcome is consistent with an expectation that students with greater demands on their time do not perform as well.

The results for the traditional-age-learner subsample are generally consistent with the full sample results except that having transferred from a community college ( $\beta = -2.56$ ) does not show the significant, negative findings. Collectively, these results suggest that traditional age learners receive as much or more benefit from a shorter-term course as adult learners.

*Day and night classes.* To examine RQ2 in greater depth, we compare students taking the class during the day in the 6-week term to students taking the class during the day in the 16-week term. The results are reported in columns 1 and 2 of Table 6. We only include students taking principles of accounting in day sections in the reported analysis. Again, we do not include the students in the 12-week terms because during the 12-week terms the class was only offered at night. The results indicate that day students in the 6-week terms perform better on the final exam than day students in the 16-week terms ( $\beta = 3.87$ ). In the 6- and 16-week day-student analysis, AGE is not significant ( $\beta = 0.72$ ). All other results are consistent with our full sample analysis.

We compare students taking the class at night in the 12-week term to students taking the class at night during the 16-week term. Results are reported in columns 3 and 4 of Table 6. We do not include students in the 6-week term in this specific analysis because in the 6-week term the course was only offered during the day. The results indicate that night students in the 12-week class perform better than night students in the 16-week class ( $\beta = 9.45$ ). In the 12- and 16-week night student analysis, GENDER ( $\beta = -1.20$ ) is not significant. Overall, these results indicate a learning benefit from a shorter semester, regardless of the class time of day.

*Males and females.* We also estimate separate regressions for male and female students. Results are reported in Table 7. When only male students are included in the analysis, the results are virtually identical to those in the full sample analysis. However, when only the female students are included, the analysis reveals different results. Consistent with the full sample analysis, the coefficients on 12WEEKS ( $\beta = 9.82$ ) and GPA ( $\beta = 18.27$ ) are positive and significant for the female students. However, unlike the full sample results, the coefficients on AGE ( $\beta = 0.13$ ) and CC ( $\beta = -2.37$ ) are not statistically significant. These findings suggest that there are no differences in performance between adult female learners and traditional age female learners. In addition, attending community college prior to taking principles of accounting results in no difference in performance in the female population. Finally, unlike the full sample results, female students taking the course in 6 weeks are no more likely to have better or worse performance on the final exam than female students taking the course in the traditional 16-week semester. As stated previously, our findings related to gender do not provide a clear picture. Therefore, since prior research provides mixed results, we believe ongoing monitoring of accounting student performance by gender may be warranted.

**TABLE 6**

**Association Between Performance in Principles of Accounting and Course and Student Characteristics for Day Classes and Night Classes**

$$\text{PERFORMANCE} = \alpha + \beta_1 \text{6WEEKS} + \beta_2 \text{12WEEKS} + \beta_3 \text{AGE} + \beta_4 \text{GENDER} + \beta_5 \text{PARTTIME} + \beta_6 \text{OVERLOAD} + \beta_7 \text{CC} + \beta_8 \text{GPA} + \epsilon_k$$

Variables	Day Classes (N=1,029)		Night Classes (N=550)	
	Estimated Coefficient	t-statistic	Estimated Coefficient	t-statistic
Intercept	17.36***	4.0	13.08*	1.9
6WEEKS	3.87**	2.3		
12WEEKS			9.45***	3.6
AGE	0.72	0.3	-6.76**	2.3
GENDER	-3.91***	3.0	-1.20	0.6
PARTTIME	0.50	0.2	0.38	0.1
OVERLOAD	3.65	1.5	-4.35	0.9
CC	-3.60**	2.0	-6.38**	2.5
GPA	15.59***	12.8	18.64***	8.6
Adj. R <sup>2</sup>	14.9%		14.0%	
F-statistic	26.7 ***		13.8 ***	

\*, \*\*, \*\*\* <.10, <.05, and <.01, respectively

- PERFORMANCE = Points earned on final exam divided by all points available on the final exam multiplied by 100;
- 6WEEKS = 1 if course is taught in 6 weeks, 0 otherwise;
- 12WEEKS = 1 if course is taught in 12 weeks, 0 otherwise;
- AGE = 1 if student is less than 25 years of age at the start of the course, 0 otherwise;
- GENDER = 1 if student is female, 0 otherwise;
- PARTTIME = 1 if student is taking less than a full-time course load, 0 otherwise;
- OVERLOAD = 1 if student is taking more than a full-time course load, 0 otherwise;
- CC = 1 if student transferred from a community college, 0 otherwise;
- GPA = Student grade point average (on a 4.0 scale) immediately prior to taking principles of accounting.

*Lab sections.* To control for the possibility of differences in lab sections, we followed the methodology suggested by Petersen (2009) and replicated our regression analysis with standard errors clustered by lab section. Results (not tabulated) were qualitatively the same as those reported.

*Final exam schedule.* Prior research has shown that final exams taken earlier in the day and earlier in the final exam schedule resulted in higher levels of performance than final exams given later in the day or later in the final exam week (Reed and Holley, 1989). We included indicator variables to control for the day within the final exam schedule the final exam was administered for each

TABLE 7

**Association Between Performance in Principles of Accounting and Course  
and Student Characteristics for Male and Female Students**

$$\text{PERFORMANCE} = \alpha + \beta_1 \text{6WEEKS} + \beta_2 \text{12WEEKS} + \beta_3 \text{AGE} + \beta_4 \text{PARTTIME} + \beta_5 \text{OVERLOAD} + \beta_6 \text{CC} + \beta_7 \text{GPA} + \varepsilon_k$$

Variables	Male Students (N=865)		Female Students (N=714)	
	Estimated Coefficient	t-statistic	Estimated Coefficient	t-statistic
Intercept	23.24***	4.6	6.68	1.3
6WEEKS	5.95**	2.4	3.25	1.4
12WEEKS	7.28**	2.3	9.82***	3.1
AGE	-5.86**	2.1	0.13	0.1
PARTTIME	2.48	1.0	-1.29	0.6
OVERLOAD	3.12	0.9	-0.33	0.1
CC	-7.11***	3.4	-2.37	1.2
GPA	15.30***	10.1	18.27***	11.8
Adj. R <sup>2</sup>	12.7%		17.0%	
F-statistic	18.9 ***		21.9 ***	

\*, \*\*, \*\*\* <.10, <.05, and <.01, respectively

PERFORMANCE = Points earned on final exam divided by all points available on the final exam multiplied by 100;

6WEEKS = 1 if course is taught in 6 weeks, 0 otherwise;

12WEEKS = 1 if course is taught in 12 weeks, 0 otherwise;

AGE = 1 if student is less than 25 years of age at the start of the course, 0 otherwise;

PARTTIME = 1 if student is taking less than a full-time course load, 0 otherwise;

OVERLOAD = 1 if student is taking more than a full-time course load, 0 otherwise;

CC = 1 if student transferred from a community college, 0 otherwise;

GPA = Student grade point average (on a 4.0 scale) immediately prior to taking principles of accounting.

section included in the sample (results not tabulated). The day of the final exam was not significantly related to the performance variable, and there were no qualitative changes in the previously reported results

*Academic maturity.* To control for other variables that may impact academic maturity, we replicated our analysis and included an indicator variable to capture whether the student was second degree seeking (results not tabulated). Our analysis indicates no difference between first and second degree

seeking students on final exam performance.<sup>24</sup> This analysis produces no qualitative changes in previously reported results.

*SAT Scores.* Some research has shown a significant relationship between SAT scores and performance. We replicated our analysis on a subset of the data for which we were able to obtain SAT scores. As expected, SAT scores are positively correlated with GPA and final exam performance. However, our inferences are unaffected with SAT scores included in the analysis.

*Outside Commitments.* We were able to obtain self-reported data on outside commitments for a subset of the sample. We included the number of hours that the student reported for work and non-school-related outside commitments in our analysis. The hours for work and non-school-related outside commitments was not significant and our inferences were not affected.

*Class size.* We also included the number of students in the class in our analysis. Class size was not significant, and our results were qualitatively unchanged.

*Additional instructors and courses.* We replicated our analysis after collecting data from eight additional summer semester sections, four of Principles of Accounting I and four of Principles of Accounting II. We include these students only for supplemental analysis because the added Principles of Accounting I sections were taught by a different instructor, and the Principles of Accounting II sections differed from the main sample in both content and instructor. These sections resulted in an addition of 1,052 observations included in the analysis. Our inferences are not affected when the additional sections are included in the analysis.

## DISCUSSION AND CONCLUSION

The findings from this study suggest that concerns about offering accounting courses or needing to teach them differently in compressed time periods are unfounded. The outcomes are consistent with the significant extant literature in other fields and the limited research in accounting supporting the proposition that a similar student-learning experience can be achieved in full-length and time-compressed courses. The study's findings also suggest that any general expectations that night students' academic performance will differ from that of day students may be unwarranted.

The most straightforward finding on compressed and full-length terms is inferred from the results as seen in Table 4. Considering the comparison of students in compressed and 16-week terms, of particular importance is that those in the compressed terms performed no worse. This contradicts any perceptions that accounting students do not perform as well in short summer or inter-session terms.

The finding that grades on the final exam in the compressed sessions were better than those in the 16-week session warrants additional discussion. Assuming that GPA, which was controlled in this study, is a good measure of student academic ability, the finding that 6- and 12-week-term students performed better than 16-week-term students on the final exam is not explained by the

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<sup>24</sup>We also compared lower-classmen (sophomores) to all other students (juniors, seniors, graduate, and second-degree seeking) in our sample. There was no difference between these two groups, and previously reported inferences were unchanged.

possibility of better performing students self-selecting into the compressed terms. However, a possible explanation might be that those who took the course in the compressed terms were more motivated in their academic work. Another possible explanation for the difference may be related to the final exam being comprehensive. Perhaps students are able to retain more information and perform better on a comprehensive final exam when they only have to remember the subject matter for 6 or 12 rather than 16 weeks. If this is the explanation, it does not bode well for students' long-term retention of the subject matter. While disconcerting, this possibility also supports the need to continue reviewing and reinforcing content learned in earlier courses as accounting majors move through their curricula.

Table 5 further explains the term-length findings by addressing student age. Students in both age categories performed better on the final exam in the 12-week term. However, for the 6- and 16-week terms, when only adult learners are considered, Table 5 shows there is no difference in final exam performance. The performance of adult learners – older students – was not affected by whether they took the course in a 6- or 16-week semester. In contrast, when only traditional age students are included in the analysis, Table 5 shows an outcome consistent with the overall sample results. Traditional age students in the 6-week term perform better than traditional age students in the 16-week term on the comprehensive final exam. In other words, students under 25 years of age do better on the final exam in the very short semester. Although the underlying reason is uncertain, the performance of traditional age learners on the final exam is benefitted by the 6-week semester while the performance of adult learners is not. The only potential explanation we can offer is that the shorter term motivates or allows younger students to either retain the material or study intensively - in other words, cram for the final exam.

Our overall conclusion regarding day and night classes is that we find no evidence that the performance of students taking principles of accounting at night is worse than that of those students who take the course during the day. Table 4 shows the result most clearly, when only 16-week-term students are included in the analysis. Including only 16-week-term students removes the potentially confounding factor of differences in term length, and only examines for differences in day and night students in a full-length term.

The finding that there are no significant differences in the performance of the day and night students in the traditional-length semesters is consistent with the mainstream treatment of night courses in current university accounting settings. Although, based only on anecdotal knowledge, we believe that faculty often view students who take classes at night as committed and hard workers. But, we also hear perceptions that night students' academic performance is worse. Based on this study's findings, any negative faculty perceptions or expectations about the performance of students who take principles of accounting at night are incorrect.

Further analysis does little to enlighten us on RQ 2. In night classes, being older is associated with better academic performance. In day classes, being male is associated with better performance. In both night and day classes, a higher GPA is associated with better performance, and a community college background is associated with worse performance. None of these attributes are particularly remarkable. Nor do they provide any support that suggests our lack of statistically significant findings is incorrect. Simply put, regardless of why students take classes at night – even if it is because of work or other commitments during the day, on average, their performance in principles of accounting is no worse than students who take the class during the day.

Further research into the performance of accounting students and class scheduling would be valuable. Although the results of this study support much of the research in other academic fields

on compressed schedules, there has been limited accounting research on compressed schedules and little or no research in accounting or other fields focused specifically on the performance of day and night students. Thus, confirmation of this study's findings is needed. Regarding compressed schedules, this study only explored student performance in the first principles of accounting course. An ongoing question is whether this study's results, which were based on business students of all majors, would hold for upper level accounting classes composed only of accounting majors. To date, only Carrington (2010) has explored this question, and only for Intermediate Accounting students. Given the highly exploratory nature of the current study, further investigation of the impact of non-academic time commitments on academic performance is also warranted.

We believe the findings that students perform better on a comprehensive final exam in shorter semesters raises interesting questions. Accounting curricula are generally full of prerequisites, suggesting an assumption on the part of programs and professors that students retain the information content from prior courses. Is this a valid assumption? Would a change in course format to include significant formal review of prerequisite courses, or a structured mechanism to require self-directed student review of prerequisite content improve performance? These questions present the opportunity for future interest and useful research.

In conclusion, short academic terms and night classes will be a part of university schedules into the future, and more information on how they impact students is important. Our findings suggest that compressed and night scheduling does not negatively impact principles of accounting students' performance. Our analysis finds no reasons to limit offerings of accounting courses in these settings and no need to modify pedagogy for different schedules. Further research into student retention of course content, self selection into various course settings, academic performance based on gender, and the impact of non-academic time commitments on student performance will likely be valuable.

#### REFERENCES

- Austin, T. L., R. R. Fennell, and C. R. Yeager. 1988. Class Scheduling and Academic Achievement in a Non-Traditional Graduate Program. *Innovative Higher Education* (No. 12) 79-90.
- Bentley, R. 2006. Comparison of Traditional and Accelerated Baccalaureate Nursing Graduates. *Nurse Educator* (Vol. 31, No. 2) 79-83.
- Boddy, G. W. 1986. Regular vs. Compressed Semester: A Comparison of Effectiveness for Teaching in Higher Education. (Doctoral dissertation, University of Nebraska, Lincoln, 1986). *Dissertation Abstracts International* (Vol. 47) 1-A.
- Brackenbury, R. L. 1987. What is More Elusive than the Learning of Philosophy? *Educational Research Quarterly* (Summer) 93-96.
- Buzash, M. D. 1994. Success of Two-Week Intensive Program in French for Superior High School Students on a University Campus. Paper presented at the Annual Meeting of the Central State conference on the Teaching of Foreign Languages, Kansas City, MO. *ERIC Document Reproduction Service* No. ED 403 740.
- Carrington, L. G. 2010. The Impact of Course Scheduling on Student Success in Intermediate Accounting. *American Journal of Business Education* (Vol. 3, No. 4) 51-60.
- Caskey, S. R. 1994. Learning Outcomes in Intensive Courses. *Journal of Continuing Higher Education* (Vol. 42) 23-27.
- Daniel, E. L. 2000. A Review of Time-Shortened Courses Across Disciplines. *College Student Journal* (Vol. 34, No. 2) 298-308.

- Donovan, J. J., and D. J. Radosevich. 1999. A Meta-Analytic Review of the Distribution of Practice Effect: Now You. *Journal of Applied Psychology* (Vol. 84) 795-805.
- Gallo, M. A., and M. Odu. 2009. Examining the Relationship Between Class Scheduling and Student Achievement in College Algebra. *Community College Review* (Vol. 36, No. 4) 200-325.
- Hennebry, K. 1997. The Impact of Class Schedule on Student Performance in a Financial Management Course. *Journal of Education for Business* (Vol. 73, No. 2) 114-120.
- Kanun, C., E. W. Ziebarth, and N. Abrahams. 1963. Comparison of Student Achievement in the Summer Term and Regular Quarter. *Journal of Experimental Education* (Vol. 32) 123-132.
- Kealey, B. T., J. Holland, and M. Watson. 2005. Preliminary Evidence on the Association Between Critical Thinking and Performance in Principles of Accounting. *Issues in Accounting Education* (Vol. 20) 33-49.
- Krug, D., T. B. Davis, and J. A. Glover. 1990. Massed Versus Distributed Repeated Reading: A Case of Forgetting Helping Recall? *Journal of Educational Psychology* (Vol. 82) 366-371.
- Lombardi, T. P., J. A. Meikamp, and W. D. Wienke. 1992. Learning Gains and Course Time Format in Special Education. *Educational Research Quarterly* (Vol. 15) 33-38.
- Petersen, M. A. 2009. Estimating Standard Errors in Finance Panel Datasets: Comparing Approaches. *Review of Financial Studies* (Vol. 22) 435-80.
- Petrowsky, M. C. 1996. The Two Week Summer Macroeconomics Course: Success or Failure? *ERIC Document Reproduction Service No. ED 396779*.
- Ray, R. E., and D. R. Kirkpatrick. 1983. Two Time Formats for Teaching Human Sexuality. *Teaching of Psychology* (Vol. 10) 84-88.
- Reed, S. A., and J. M. Holley. 1989. The Effect of Final Examination Scheduling on Student Performance. *Issues in Accounting Education* (Vol. 4, No. 2) 327-344.
- Reynolds, J. H., and R. Glaser. 1964. Effects of Repetition and Spaced Review Upon Retention of A Complex Learning Task. *Journal of Educational Psychology* (Vol. 55) 297-308.
- Scott, P. A. 1995. Learning Experiences in Intensive and Semester-Length Classes. *College Student Journal* (Vol. 29) 207-213.
- \_\_\_\_\_, and C. Conrad. 1992. A Critique of Intensive Courses and an Agenda for Research. In J. C. Smart (ed.). *Higher Education: Handbook of Theory and Research*. (New York: Agathod Press).
- Van Scyoc, L. J., and J. Gleason. 1993. Traditional or Intensive Course Lengths? A Comparison of Outcomes in Economics Learning. *Journal of Economics Education* (Vol. 24) 15-22.
- Waechter, R. F. 1967. A Comparison of Achievement and Retention by College Junior Students in an Earth Science Course After Learning Under Massed and Spaced Conditions. (Doctoral dissertation, Pennsylvania State University, 1967). *Dissertation Abstracts International* (Vol. 27) 11-A.
- Williams, W. 1992. The relationship between Class Scheduling Formats and the Academic Achievement of Graduate Students. *ERIC Document Reproduction Service No. ED 344513*.
- Wlodkowski, R. 2003. Accelerated Learning in Colleges and Universities. *New Directions for Adults and Continuing Education* (Spring) 5-16.
- \_\_\_\_\_, J. E. Mauldin, and S. W. Gahn. 2001. *Learning in the Fast Lane: Adult Learners' Persistence and Success in Accelerated College Programs*. (Indianapolis: Lumna Foundation for Education).
- \_\_\_\_\_, and T. N. Westover. 1999. Accelerated Courses as a Learning Format for Adults. *Canadian Journal for the Study of Adult Education* (Vol. 13, No. 1) 1-20.

- Wolfe, A. 1998. How a For-Profit University Can Be Invaluable to the Traditional Liberal Arts. *The Chronicle of Higher Education* (Vol. 44, December 4) B4-B5.
- Youssef, F. A., and N. Goodrich. 1996. Accelerated Versus Traditional Nursing Students: A Comparison of Stress, Critical Thinking Ability and Performance. *International Journal of Nursing Studies* (Vol. 33, No. 1) 76-82.