

NEW YORK UNIVERSITY
ROBERT F. WAGNER GRADUATE SCHOOL OF PUBLIC SERVICE
P11.1021: Financial Management
Midterm Examination
Professors Charles, Forsythe and Rose
Spring 2009

Name: _____

Student ID: _____

Section (circle one):	Wednesday 12:30 pm Forsythe	Wednesday 6:45 pm Rose	Thursday 12:30 pm Rose	Thursday 6:45 pm Charles
-----------------------	-----------------------------------	------------------------------	------------------------------	--------------------------------

Instructions:

- 1) Please turn off your cell phone.
- 2) Print your initials at the top of each page.
- 3) You may use one page of notes. Please put away all other materials.
- 4) You may use, but not share, a calculator. Remember to clear it between calculations!
- 5) Write clearly, show your work, and circle your final answer to each question.
- 6) When you are done, hand in your exam and your page of notes.

Good luck!

=====
This section is for graders:

2 _____ 3 _____ 4 _____ 5 _____

6 _____ 7 _____ 9 _____ 10 _____

Total Exam Points _____ x 40% of Course Grade = Course Points _____

Part I. Multiple Choice (24 points)

1. (2 points) A hospital bought a new CAT scan machine for \$2 million. The hospital plans to keep the machine for 10 years, at which point it expects to sell the machine for \$200,000. The annual depreciation expense is (select one):
 - a. \$18,000
 - b. \$180,000
 - c. \$1,800,000
 - d. \$20,000
 - e. \$200,000
 - f. \$2,000,000

2. (2 points) Which of the following items might appear on an operating budget? (Select all that apply)
 - a. Beginning balances
 - b. Borrowed funds
 - c. Interest on borrowed funds
 - d. Repayment of borrowed funds
 - e. Purchase of capital assets
 - f. Depreciation of capital assets
 - g. Profits

3. (2 points) Suppose a theater plans to take out a loan to address an anticipated cash shortfall in its first year of operation. Which of the following numbers on the quarterly cash budget would indicate the minimum amount needed to fully address the cash shortfall? (Select one)
 - a. The first-quarter ending balance
 - b. The fourth-quarter ending balance
 - c. The sum of all four quarters' ending balances
 - d. The largest negative quarterly ending balance
 - e. The annual ending balance

4. (3 points) Which of the following would be considered indirect costs for the art department of a high school? (Select all that apply)
- a. The art teacher's salary
 - b. The principal's salary
 - c. The science teacher's salary
 - d. The janitor's salary
 - e. Art supplies
 - f. The school's rental lease
5. (2 points) Which of the following is an example of an activity-based-costing (ABC) duration cost driver? (Select one)
- a. Number of employees
 - b. Staff hours
 - c. Square feet occupied
 - d. Production volume
6. (2 points) A hospital is considering constructing a new wing. This project would entail up-front construction costs and would generate future revenues. If the project's net present value is negative, then the internal rate of return must be (select one):
- a. Greater than the discount rate
 - b. Equal to the discount rate
 - c. Less than the discount rate
7. (3 points) Identify the correct sequence of the government budget process by assigning numbers (1 through 5) to each of the following stages:
- _____ Executive budget
 - _____ Budget call
 - _____ Legislative action
 - _____ Budget review
 - _____ Agency requests

8. (4 points) Fill in the blanks, selecting your answers from the following list:

- a. Functional budget
- b. Flexible budget
- c. Line-item budget
- d. Program budget
- e. Responsibility center budget
- f. Special purpose budget

_____ Shows how profits change with production volume

_____ Shows the profits of each of the organization's major mission-related activities

_____ Shows program expenses and supporting-services expenses separately

_____ Shows expenses incurred by each managerial unit

9. (4 points) Which method is appropriate for each scenario? Fill in the blanks, selecting your answers from the following list:

- a. Annualized cost
- b. Future value of an annuity
- c. Internal rate of return
- d. Net present cost
- e. Net present value
- f. Present value of an annuity

The manager of a science museum is trying to decide whether or not to install a new exhibit. The exhibit would entail a single up-front installation cost and would generate admissions revenue in each of the ten years of its estimated useful lifetime. The amount of revenue is expected to vary from year to year. _____

An international relief organization has received five-year donor pledge, whereby the donor will donate the same amount each year for five years. The manager plans to invest the donations as they are received, and wants to know how much they will be worth at the end of year five. _____

The manager of a soup kitchen is trying to decide which of two refrigerators is more cost-effective. One refrigerator has a higher purchase price, lower annual energy costs, and a longer expected useful lifetime than the other. Otherwise the two refrigerators are identical. _____

Which method should not be used because it sometimes generates misleading answers?

Part II. Analytical Problems (42 points)

1. (7 points) Exactly three years ago, Wagner City issued a ten-year bond with a face value of \$10,000 that makes semiannual interest payments at an annual rate of 5%. The current market rate is 6%.
 - a. How much is the bond worth today? Show your work and circle your answer.

 - b. Write down the Excel formula (with numerical values plugged in) that you would use to solve the problem in part a.

2. (8 points) The manager of a soup kitchen expects that she will need to replace the kitchen's oven three years from now. Her goal is to have saved \$5,000 by that time.
 - a. If the manager sets aside \$120 at the beginning of each month for three years, what annual interest rate would she need to earn in order to reach her goal? Show your work and circle your answer.

 - b. Suppose the manager learns that she can earn an annual interest rate of 4%. How much must she deposit at the beginning of each month (instead of the \$120 she had planned in part a) in order to reach her goal? Show your work and circle your answer.

 - c. Write down the Excel formula (with numerical values plugged in) that you would use to solve the problem in part b.

3. (7 points) Urban University's community service office is planning an "alternative spring break" trip, in which students will travel to Florida and build a house for a low-income family. The university has agreed to contribute \$20,000 to help defray costs. The two trip leaders will be paid \$2,000 each. Travel, accommodations, and food will cost a total of \$450 per student, and 40 students are expected to participate. What fee should be charged to each student in order for the trip to break even? Use break-even analysis (do not prepare a budget), show your work, and circle your answer.
4. (10 points) A hospital is trying to decide which of two MRI machines to buy. Machine A has a higher purchase price than Machine B, but would require lower maintenance costs and would generate more patient revenues, as shown in the tables below. The hospital uses a discount rate of 5%.
- a. Calculate the net present value of each machine. Show your work and circle both of your solutions.

Machine A			Machine B		
Year	Cash outflows	Cash inflows	Year	Cash outflows	Cash inflows
0	2,000,000	0	0	1,500,000	0
1	0	700,000	1	0	700,000
2	0	750,000	2	0	700,000
3	0	800,000	3	100,000	750,000
4	100,000	800,000	4	200,000	750,000
5	100,000	850,000	5	200,000	800,000

- b. Write down the Excel formula (with numerical values plugged in) that you would use to find the net present value of Machine A.
- c. Which machine should the hospital buy?

5. (10 points) Wagner City's transit authority planned to charge a subway fare of \$1.50 and a bus fare of \$1.00 in fiscal year 2008, but ended up raising the subway fare to \$1.75 at the beginning of the year (the bus fare of \$1.00 remained in effect as planned). The transit authority expected riders to make a total of 48,000 subway trips and 32,000 bus trips during fiscal year 2008, but the actual numbers were 40,000 subway trips and 40,000 bus trips.

a. Calculate the total, volume, mix, and price variances. Show your work and circle each of your four solutions.

b. Write few sentences explaining your results in plain language (i.e. without using financial jargon).

Part III. Budget Preparation (34 points)

Atlantic Aquarium is a small, three-year-old, not-for-profit aquarium. As the aquarium's financial manager, you are responsible for preparing an annual operating budget and a semiannual cash budget for fiscal year 2010, which begins on January 1, 2010. (Semiannual means your cash budget must separately show the first half of the year and the second half of the year in side-by-side columns. You do NOT need to include a third column showing the annual total.)

In FY 2010, an estimated 100,000 visitors will visit the aquarium, spread evenly throughout the year. Admissions prices are \$10 for general admission and \$5 for children and senior citizens. You expect 60% of the visitors to pay the general admission price and the rest to qualify for the discounted price. In addition, you expect the aquarium to earn a \$300,000 research grant and \$100,000 in contributions. The research grant will be received in January. The contributions will be received evenly throughout the year. The aquarium will begin FY 2010 with \$12,000 in cash.

The aquarium's employees will earn annual salaries and benefits totaling \$400,000, to be paid in twelve equal monthly installments during the year. The aquarium plans to pay for \$200,000 worth of fish food and other supplies in January and use them evenly throughout the year. The aquarium will hold a special event in December at a cost of \$100,000; the Aquarium will pay half of this amount in December and half in January of FY 2011. Utilities will cost \$50,000 and will be used and paid for evenly throughout the year. The aquarium expects to receive and pay for \$300,000 worth of new equipment in January. The equipment is expected to last 10 years and to have no salvage value. The aquarium owns its own building, which was purchased and renovated three years ago at a cost of \$5 million. You estimate that the building has a total useful lifetime of 25 years and no salvage value. The aquarium has no outstanding loans and no plans to borrow.

(Please do not use this space)

Please prepare your annual operating budget on this page.

Please prepare your semiannual cash budget on this page.

NEW YORK UNIVERSITY
ROBERT F. WAGNER GRADUATE SCHOOL OF PUBLIC SERVICE
P11.1021: Financial Management
Midterm Examination
Professors Charles, Forsythe and Rose
Spring 2009

SOLUTIONS

Name: _____

Student ID: _____

Section (circle one):	Wednesday 12:30 pm Forsythe	Wednesday 6:45 pm Rose	Thursday 12:30 pm Rose	Thursday 6:45 pm Charles
-----------------------	-----------------------------------	------------------------------	------------------------------	--------------------------------

Instructions:

- 1) Please turn off your cell phone.
- 2) Print your initials at the top of each page.
- 3) You may use one page of notes. Please put away all other materials.
- 4) You may use, but not share, a calculator. Remember to clear it between calculations!
- 5) Write clearly, show your work, and circle your final answer to each question.
- 6) When you are done, hand in your exam and your page of notes.

Good luck!

=====

This section is for graders:

2 _____ 3 _____ 4 _____ 5 _____

6 _____ 7 _____ 9 _____ 10 _____

Total Exam Points _____ x 40% of Course Grade = Course Points _____

Part I. Multiple Choice (24 points)

1. (2 points) A hospital bought a new CAT scan machine for \$2 million. The hospital plans to keep the machine for 10 years, at which point it expects to sell the machine for \$200,000. The annual depreciation expense is (select one):
- a. \$18,000
 - b. \$180,000 [2]**
 - c. \$1,800,000
 - d. \$20,000
 - e. \$200,000
 - f. \$2,000,000
2. (2 points) Which of the following items might appear on an operating budget? (Select all that apply)
- a. Beginning balances
 - b. Borrowed funds
 - c. Interest on borrowed funds [1/2]**
 - d. Repayment of borrowed funds
 - e. Purchase of capital assets
 - f. Depreciation of capital assets [1]**
 - g. Profits [1/2]**

Subtract 1 point for each incorrect answer [minimum points = 0]

3. (2 points) Suppose a theater plans to take out a loan to address an anticipated cash shortfall in its first year of operation. Which of the following numbers on the quarterly cash budget would indicate the minimum amount needed to fully address the cash shortfall? (Select one)
- a. The first-quarter ending balance
 - b. The fourth-quarter ending balance
 - c. The sum of all four quarters' ending balances
 - d. The largest negative quarterly ending balance [2]**
 - e. The annual ending balance

4. (3 points) Which of the following would be considered indirect costs for the art department of a high school? (Select all that apply)
- a. The art teacher's salary
 - b. The principal's salary [1]**
 - c. The science teacher's salary
 - d. The janitor's salary [1]**
 - e. Art supplies
 - f. The school's rental lease [1]**

Subtract 1 point for each incorrect answer [minimum points = 0]

5. (2 points) Which of the following is an example of an activity-based-costing (ABC) duration cost driver? (Select one)
- a. Number of employees
 - b. Staff hours [2]**
 - c. Square feet occupied
 - d. Production volume

6. (2 points) A hospital is considering constructing a new wing. This project would entail up-front construction costs and would generate future revenues. If the project's net present value is negative, then the internal rate of return must be (select one):
- a. Greater than the discount rate
 - b. Equal to the discount rate
 - c. Less than the discount rate [2]**

7. (3 points) Identify the correct sequence of the government budget process by assigning numbers (1 through 5) to each of the following stages:

- 4 Executive budget
- 1 Budget call
- 5 Legislative action
- 3 Budget review
- 2 Agency requests

Subtract 1/2 point for each incorrect number; if all numbers are incorrect, 0 points.

8. (4 points) Fill in the blanks, selecting your answers from the following list:

- a. Functional budget
- b. Flexible budget
- c. Line-item budget
- d. Program budget
- e. Responsibility center budget
- f. Special purpose budget

b [1] Shows how profits change with production volume

d [1] Shows the profits of each of the organization's major mission-related activities

a [1] Shows program expenses and supporting-services expenses separately

e [1] Shows expenses incurred by each managerial unit

9. (4 points) Which method is appropriate for each scenario? Fill in the blanks, selecting your answers from the following list:

- a. Annualized cost
- b. Future value of an annuity
- c. Internal rate of return
- d. Net present cost
- e. Net present value
- f. Present value of an annuity

The manager of a science museum is trying to decide whether or not to install a new exhibit. The exhibit would entail a single up-front installation cost and would generate admissions revenue in each of the ten years of its estimated useful lifetime. The amount of revenue is expected to vary from year to year. **e** [1]

An international relief organization has received five-year donor pledge, whereby the donor will donate the same amount each year for five years. The manager plans to invest the donations as they are received, and wants to know how much they will be worth at the end of year five. **b** [1]

The manager of a soup kitchen is trying to decide which of two refrigerators is more cost-effective. One refrigerator has a higher purchase price, lower annual energy costs, and a longer expected useful lifetime than the other. Otherwise the two refrigerators are identical. **a** [1]

Which method should not be used because it sometimes generates misleading answers?
c [1]

Part II. Analytical Problems (42 points)

1. (7 points) Exactly three years ago, Wagner City issued a ten-year bond with a face value of \$10,000 that makes semiannual interest payments at an annual rate of 5%. The current market rate is 6%.

- a. How much is the bond worth today? Show your work and circle your answer.

rate	0.03 [1]
nper	14 [1]
pmt	250 [1]
fv	10000 [1]

$PV =$ (\$9,435.20) [2]

OK if both pmt and fv are negative and solution is positive
Subtract ½ if signs on pmt and fv are different, even if solution is correct
Subtract 2 if interest rates are reversed (solution = 10,584.55)

- b. Write down the Excel formula (with numerical values plugged in) that you would use to solve the problem in part a.

$=PV(6\%/2,7*2,250,10000)$ [1]

OK if numbers are wrong, but consistent with part a
OK if rate=.06/2, .03, or 3% and nper=14. Subtract ½ for each error (no % or decimal, 250 and 10000 have different signs, comma in 10000, etc.) Min=0

2. (8 points) The manager of a soup kitchen expects that she will need to replace the kitchen's oven three years from now. Her goal is to have saved \$5,000 by that time.

- a. If the manager sets aside \$120 at the beginning of each month for three years, what annual interest rate would she need to earn in order to reach her goal? Show your work and circle your answer.

nper	36 [1]
fv	5,000 [1/2]
pmt	(120) [1/2]
type=1	
monthly rate	0.78% [1]
annual rate	9.31% [1]

OK if monthly rate is not reported but annual rate is correct
Subtract ½ if signs on pmt and fv are shown as same, even if solution is correct
Subtract ½ for rounding errors (solution = 9.36% or 9.4%)
Subtract 1 for forgetting type=1 (solution = 9.82%)
Subtract 2 if PMT=(120)*12 & nper=3 (solution = 7.49%)

- b. Suppose the manager learns that she can earn an annual interest rate of 4%. How much must she deposit at the beginning of each month (instead of the \$120 she had planned in part a) in order to reach her goal? Show your work and circle your answer.

nper	36
fv	5,000
rate	4%/12 [1]
type = 1	
pmt	(\$130.52) [2]

Subtract 1 for forgetting type=1 (solution=130.95)
 Subtract 1.5 if rate=4% and nper=3 (solution = 128.34) but subtract 2 if this solution is not divided by 12 (annual solution = 1,540.14)

- c. Write down the Excel formula (with numerical values plugged in) that you would use to solve the problem in part b.

=PMT(4%/12,3*12,,5000,1) [1]
 OK if numbers are wrong, but consistent with part b
 Subtract ½ for each error (rounding off to .33%, no placeholder comma, etc.) Min = 0

3. (7 points) Urban University’s community service office is planning an “alternative spring break” trip, in which students will travel to Florida and build a house for a low-income family. The university has agreed to contribute \$20,000 to help defray costs. The two trip leaders will be paid \$2,000 each. Travel, accommodations, and food will cost a total of \$450 per student, and 40 students are expected to participate. What fee should be charged to each student in order for the trip to break even? Use break-even analysis (do not prepare a budget), show your work, and circle your answer.

FC 4000 [1]
 FR 20000 [1]
 VC 450 [1]
 Q 40 [1]

VR = (FC-FR)/Q + VC [1]

VR = \$50 [2]

OK if numbers are plugged directly into formula instead of shown separately.
 Subtract ½ if answer is 50 students instead of \$50.

4. (10 points) A hospital is trying to decide which of two MRI machines to buy. Machine A has a higher purchase price than Machine B, but would require lower maintenance costs and would generate more patient revenues, as shown in the tables below. The hospital uses a discount rate of 5%.

- a. Calculate the net present value of each machine. Show your work and circle both of your solutions.

Machine A				Machine B			
Year	Cash outflows	Cash inflows	Net cash flow	Year	Cash outflows	Cash inflows	Net cash flow
0	2,000,000	0	(2,000,000)	0	1,500,000	0	(1,500,000)
1	0	700,000	700,000	1	0	700,000	700,000
2	0	750,000	750,000	2	0	700,000	700,000
3	0	800,000	800,000	3	100,000	750,000	650,000
4	100,000	800,000	700,000	4	200,000	750,000	550,000
5	100,000	850,000	750,000	5	200,000	800,000	600,000

[2] total for showing correct net cash flows
 Subtract 1/2 pt for each error (min=0)

[2] total for showing correct net cash flows
 Subtract 1/2 pt for each error (min=0)

NPV = 1,201,545 [2]

NPV = 1,285,684 [2]

Give full credit for wrong NPVs if consistent with erroneous net cash flows shown.

- b. Write down the Excel formula (with numerical values plugged in) that you would use to find the net present value of Machine A.
 $=NPV(5\%,700000,750000,800000,700000,750000)-2000000$ [1]
 Subtract ½ for each error (-2000000 inside formula, commas in numbers, etc.) Minimum = 0. OK if numbers are wrong but consistent with part a.

- c. Which machine should the hospital buy? **Machine B** [1]

5. (10 points) Wagner City’s transit authority planned to charge a subway fare of \$1.50 and a bus fare of \$1.00 in fiscal year 2008, but ended up raising the subway fare to \$1.75 at the beginning of the year (the bus fare of \$1.00 remained in effect as planned). The transit authority expected riders to make a total of 48,000 subway trips and 32,000 bus trips during fiscal year 2008, but the actual numbers were 40,000 subway trips and 40,000 bus trips.

- a. Calculate the total, volume, mix, and price variances. Show your work and circle each of your four solutions.

	volume	mix	price		
Original budget	80,000	0.60	1.50	72,000	
	80,000	0.40	1.00	32,000	
				104,000	[1]
Flex budget	80,000	0.60	1.50	72,000	
	80,000	0.40	1.00	32,000	
				104,000	
VMA budget	80,000	0.50	1.50	60,000	
	80,000	0.50	1.00	40,000	
				100,000	[1]
Actual revenue	80,000	0.50	1.75	70,000	
	80,000	0.50	1.00	40,000	
				110,000	[1]

Volume variance	0		[1]
Mix variance	(4,000)	U	[1]
Price variance	10,000	F	[1]
Total variance	6,000	F	[1]

Subtract 1 if mix variance is labeled quantity variance

Subtract 2 if signs and/or U/F are reversed

Subtract 3 if volume is not shown as total number of trips and solutions are not correct

Subtract 1 if volume is not shown as total number of trips but solutions are correct (and subtract another 1 if, for this reason, volume and mix variances are flipped)

Subtract 2 for error in mix

Subtract 2 for error in price

- b. Write few sentences explaining your results in plain language

The transit authority earned more revenue than expected [1] because they raised the subway fare [1], and despite the fact that a smaller share of riders rode the (higher-priced) subway and a larger share rode the (lower-priced) bus [1]. Subtract ½ for saying that subway ridership declined without specifying that total ridership remained the same, or for otherwise being vague about why the mix variance is unfavorable.)

Part III. Budget Preparation (34 points)

Atlantic Aquarium is a small, three-year-old, not-for-profit aquarium. As the aquarium's financial manager, you are responsible for preparing an annual operating budget and a semiannual cash budget for fiscal year 2010, which begins on January 1, 2010. (Semiannual means your cash budget must separately show the first half of the year and the second half of the year in side-by-side columns. You do NOT need to include a third column showing the annual total.)

In FY 2010, an estimated 100,000 visitors will visit the aquarium, spread evenly throughout the year. Admissions prices are \$10 for general admission and \$5 for children and senior citizens. You expect 60% of the visitors to pay the general admission price and the rest to qualify for the discounted price. In addition, you expect the aquarium to earn a \$300,000 research grant and \$100,000 in contributions. The research grant will be received in January. The contributions will be received evenly throughout the year. The aquarium will begin FY 2010 with \$12,000 in cash.

The aquarium's employees will earn annual salaries and benefits totaling \$400,000, to be paid in twelve equal monthly installments during the year. The aquarium plans to pay for \$200,000 worth of fish food and other supplies in January and use them evenly throughout the year. The aquarium will hold a special event in December at a cost of \$100,000; the Aquarium will pay half of this amount in December and half in January of FY 2011. Utilities will cost \$50,000 and will be used and paid for evenly throughout the year. The aquarium expects to receive and pay for \$300,000 worth of new equipment in January. The equipment is expected to last 10 years and to have no salvage value. The aquarium owns its own building, which was purchased and renovated three years ago at a cost of \$5 million. You estimate that the building has a total useful lifetime of 25 years and no salvage value. The aquarium has no outstanding loans and no plans to borrow.

(Please do not use this space)

Please prepare your annual operating budget on this page.

0.5 pt for complete heading	Atlantic Aquarium Annual operating budget FY 2010		
0.5	<u>Revenues and support</u>		
	Admissions	800,000	2
	Grants	300,000	1
	Contributions	100,000	1
		1,200,000	
0.5	<u>Expenses</u>		
	Salaries and benefits	400,000	1
	Supplies	200,000	1
	Special events	100,000	1
	Utilities	50,000	1
	Depreciation	230,000	2
		980,000	
0.5	<u>Profit</u>	220,000	1 if = rev - exp even if wrong #

Total = 13 points

Do not give credit for fundamentally wrong formatting (e.g. "ending balance" instead of "profit") but do give credit for acceptable alternatives (e.g. "surplus")

Subtract 1/2 point for fundamentally wrong labels (e.g. "equipment" instead of "depreciation") but not for minor errors (e.g. "salaries" instead of "salaries and benefits")

Subtract 1/2 for denoting profit with an "F"
 Subtract 1 for showing capital investment in expenses
 Subtract 1 if total revenue is not equal to the sum of all revenue
 Subtract 1 if total expenses is not equal to the sum of all expenses

Please prepare your semiannual cash budget on this page.

0.5 pt for complete heading	Atlantic Aquarium Semiannual cash budget FY 2010				
		<u>First half</u>	<u>Second half</u>		
0.5	<u>Beginning balance</u>	12,000	37,000	2*	if 2nd half bb = 1st half eb,
0.5	<u>Cash receipts</u>				even if wrong #
	Admissions	400,000	400,000	1	
	Grants	300,000	0	2	
	Contributions	50,000	50,000	1	
	Total cash receipts	<u>750,000</u>	<u>450,000</u>		
0.5	<u>Available cash</u>	762,000	487,000	1	if = bb + cr, even if wrong #
0.5	<u>Cash payments</u>				
	Salaries and benefits	200,000	200,000	1	
	Supplies	200,000	0	2	
	Special events	0	50,000	2	
	Utilities	25,000	25,000	1	
	Total cash payments	<u>425,000</u>	<u>275,000</u>		
0.5	<u>Subtotal</u>	337,000	212,000	1	if = ac - cp, even if wrong #
0.5	<u>Investment</u>	(300,000)	0	2	
0.5	<u>Ending balance</u>	37,000	212,000	1	if = sub + inv, even if wrong #

Total = 21 points

* Each of these points refers to total credit for both numbers in the row. If one number is right and one is wrong, assign half this amount.

Do not give credit for fundamentally wrong formatting (e.g. "expenses" instead of "payments")
But do give credit for acceptable alternatives (e.g. "disbursements")

Subtract 2 points for including depreciation

Subtract 1 point if investment/equipment is shown in the cash payment section

Subtract 0.5 points for not showing the investment as a negative value

Subtract 0.5 points for showing payments as negative values

Subtract 1 point for each inclusion of incorrect items (e.g. "repayment of loan")

Wagner Graduate School of Public Service

Financial Management of Public, Nonprofit, and Health Organizations (P11.1021)

Waiver Exam

The Waiver Exam for P11.1021 has two modules:

- **Module I** reflects the material in the first half of the course. It is most similar to material in a Managerial Accounting class, although it also has elements of Corporate Finance. The exam should take 1 hour but we will allow you 1.5 hours if needed.
- **Module II** reflects the material in the second half of the course. It is most similar to the material from a course in Financial Accounting, although it also contains information typically found in courses on Government Accounting and Not-for-Profit Accounting. The exam should take 1.5 hours, including reviewing the financial statements that are part of the exam, but you may take 2 hours if needed.

You must earn a grade of 70 out of 100 or better to pass a module. If your grade on a waiver exam module is below 70, we believe that you would benefit substantially from taking the course. The P11.1021 course is the foundation for the other courses in the finance specialization. Thus, students who want to pursue the finance specialization should consider taking P11.1021 if your grade on a module on the waiver exam is less than 85.

- **If you pass both modules**, you may waive P11.1021.
- **If you pass Module I only**, then you may take the second half of P11.1021 as a two-credit directed reading in lieu of taking the full P11.1021 course. In this case you will be required to submit all assignments from the second half of the course, and to take the final exam.
- **If you pass Module II only**, you may take the first half of P11.1021 as a two-credit directed reading, in lieu of taking the full course. All homework and assignments for the first half of P11.1021 are required, and the P11.1021 midterm exam will serve as the final exam for the two-credit course.

You may sit for either Module I or Module II, or both. If you choose to sit for only one of the two Modules, you forfeit the opportunity to sit for the other module at a later time. A failed waiver exam module may not be retaken. If you choose to sit for both, it must be done in one sitting, with a brief break between the two modules.

You may bring a financial calculator with time value of money functions to the exam and are encouraged to do so.

To prepare for the exam, students are encouraged to review the syllabus for the course (available on the Wagner website) and to review the course textbook, which is available at the NYU Professional Bookstore on LaGuardia Place or at the NYU Bobst Library.

(8 points) 1. Circle the correct answer:

(2 points) a. If all other factors remain unchanged, an increase in the variable cost per unit of service will

- reduce the breakeven volume of service.
- reduce the contribution margin per unit of service.
- increase total fixed costs.

(2 points) b. Working capital includes

- accounts payable.
- equipment.
- bonds payable.

(2 points) c. An unfavorable price variance on food supplies expense indicates that

- the amount of food used was higher than anticipated.
- the prices paid for food were lower than anticipated.
- the prices paid for food were higher than anticipated.

(2 points) d. The additional cost incurred as a result of providing one more unit of service is

- marginal cost.
- average cost.
- full cost.
- opportunity cost.

(12 points) 2. The village of Forrest Park sold bonds to finance infrastructure maintenance and improvements on January 1, 1999. The bonds have a combined face value of \$5,000,000 and carry a 6% coupon rate paid semiannually on June 30 and Dec 31 each year. The bonds mature in 10 years. The bonds have a call option that allows the Village to buy back the bonds from bondholders at current market prices. The village manager has proposed that the Village exercise its call option and redeem the bonds early. How much must the village of Forrest Park pay to its current bondholders to purchase its bonds on July 1, 2003 if current market interest rates are then 4.5%? (Hint: treat the full 5,000,000 as a single bond and find the bond price)

(10 points) 3. The Wagner Student Association (WSA) is planning a fund raising event for the spring semester. The WSA is planning to hire the Dizzy Gillespie Heritage Band as entertainment for a fee of \$750. The Schoenberg Museum was selected as the site for the event. The Museum will charge the WSA \$600 for the use of its banquet room. Sylvia's Restaurant was selected to cater the event. Sylvia's Restaurant will charge the WSA a flat fee of \$400 and a \$20 per meal charge.

- a) **(5 points)** The WSA expects 250 students and alumni to attend its spring fund raising event. What is the minimum (breakeven) ticket price for the WSA's spring fund raising event?
- b) **(5 points)** The WSA is considering two ticket prices, a \$25 price for students and a \$75 price for alumni. If three students are expected to attend the event for each alumni, how many students and alumni must attend the spring fund raising event if it is to breakeven?

(4 points) 4. Circle the letter of the best available answer to fill the blank.

The Field Foundation's accounting manager prepares reports about the Foundation's grant making, investments, and general administrative activities. The cost of her salaries and fringe benefits would be included as part of the _____ cost of its investment management activity.

- a. Direct cost
- b. Indirect cost
- c. Variable cost

The Field Foundation pays Ariel Capital Management a fee for managing a portion of its \$155 million investment in stocks and bonds. The cost of this fee would be included as part of the _____ cost of its investment management activity.

- a. Direct cost
- b. Indirect cost
- c. Variable cost

(4 points) 5. Select the best choice from the following to answer questions A and B:

- A) An increase in the level of service volume will have the following effects:
- a. Increase unit variable cost and decrease unit fixed cost
 - b. Unit variable cost remains constant and unit fixed cost remains constant
 - c. Decrease unit variable cost and unit fixed cost remains constant
 - d. Unit variable cost remains constant and unit fixed cost decrease
- B) Which one of the following is a name for the range of service volume over which an organization company expects to operate?
- a. Mixed range
 - b. Fixed range
 - c. Variable range
 - d. Relevant range

(8 points) 6. Dos Agency delivers 2 services: A and B. The projected information for these two services for 2003 are:

	<u>Service A</u>	<u>Service B</u>
Units of service	4,000	1,000
Unit selling price	\$12	\$8
Unit variable cost	8	4
Total fixed costs are projected to be \$10,000.		

Required:

First prepare a line item operating budget for Dos Agency for 2003. Then compute a flexible budget for the Dos Agency assuming a 20% increase in its projected 2003 unit of service volume.

(14 points) 7. Smallville Children Services (SCS) provide adoptions and foster care services. SCS bills the State for its foster care services under a fee for service contract. SCS charges adoptive parents a sliding scale fee based on family income for their adoption services. Fourth quarter 2003 revenues are anticipated to be as follows:

	October	November	December
Adoptions	\$120,000	\$100,000	\$105,000
Foster Care	\$400,000	\$420,000	\$460,000

SCS finds that it collects 40% of the amounts billed to the State for foster care services in the month of service with the balance collected in the month following service. Adoption fees are collected in the month that they are earned.

SCS is planning to acquire three minivans at a total cost of \$75,000 in November 2003. The purchase of the minivans will be financed with a \$75,000 installment loan, with the first payment due in December.

SCS anticipates incurring salaries and fringe benefit expenses of \$480,000 each month. Salaries and fringe benefit expenses are paid as incurred. Monthly depreciation expense is \$15,000. SCS plans to use food and office supplies at a total expense of \$18,000 during the month of November 2003, but cash payments to suppliers are expected to be \$16,000.

Assume that SCS has a cash balance of \$40,000 on October 31, 2003.

Prepare a cash budget for the month of November 2003.

(15 points) 8. Prospect City is considering two contractors, A and B, to resurface Broad Street. Contractor A bid \$30,000 for the job and, with annual maintenance of \$1,500, will guarantee the surface for five years. Contractor B bid \$24,000 for the job and, with annual maintenance of \$2,000, will guarantee the surface for six years. Assuming a discount rate of 6%, which contractor should Prospect City chose?

(15 points) 9. Cavalier Skilled Nursing Homes is considering setting up a new facility to serve the Bronx. Management estimates that it will cost \$1.5 million to purchase the necessary equipment and renovate the building to support its long term care services. The projected net cash flows generated by the new facility over the next five years is given below:

Year 1	-0-
Year 2	\$380,000
Year 3	\$400,000
Year 4	\$420,000
Year 5	\$440,000

Assuming a five year life and 8% cost of capital, Compute the net present value of this proposal. On the merits of the net present value, should Cavalier Skilled Nursing Homes pursue the project?

(10 points) 10. The nurses in the intensive care unit of Merryville Hospital provided an average of 5 hours per patient at an average wage of \$24 per hour. The actual patients served was 90. Merryville budgeted for 95 patients at 6 hours per patient and an average wage of \$22. Compute the total variance, volume variance, rate variance, and efficiency variance for Merryville Hospital's nursing salary expense in intensive care unit. Indicate whether the variance is favorable (F) or unfavorable (U) for each of the four variances.

NEW YORK UNIVERSITY
ROBERT F. WAGNER GRADUATE SCHOOL OF PUBLIC SERVICE

P11.1021: Financial Management - Midterm Examination
Professors Denison and Stewart - Spring 2003

Your Name: Answer Key

Your Student ID: _____

Circle the day that your class meets

Tuesday Thursday Thursday Friday
Afternoon Evening

Directions:

- 1) Place all materials on the floor.
Print your initials at the top of each page.
- 2) You may use, but not share a calculator. **Remember to clear your calculator before each calculation (AC/ON).** If you do not, you may get wrong results.
- 3) Show all your work. We can only give you partial credit if you show how you approached the problem! You may round your answers to the nearest dollar. For the time-value-of-money computations show what information you used to calculate the answer. Do not just write down the final answer.
- 4) Hand in your exam plus all other papers.
- 5) The points for each question are indicated in parentheses next to the question.
- 6) Look through the exam before you begin.

Good Luck

This section for graders:

Points

1 _____
2 _____
3 _____
4 _____
5 _____
6 _____
7 _____
8 _____
9 _____
10 _____

Total Points _____ X 40% = Course Points _____

**Numbers in Parentheses before each part of each problem
represent the possible points for that question**

(8 points) 1. Circle the correct answer:

(2 points) a. If all other factors remain unchanged, an increase in the variable cost per unit of service will

- reduce the breakeven volume of service.
- **reduce the contribution margin per unit of service.**
- increase total fixed costs.

(2 points) b. Working capital includes

- **accounts payable.**
- equipment.
- bonds payable.

(2 points) c. An unfavorable price variance on food supplies expense indicates that

- the amount of food used was higher than anticipated.
- the prices paid for food were lower than anticipated.
- **the prices paid for food were higher than anticipated.**

(2 points) d. The additional cost incurred as a result of providing one more unit of service is

- **marginal cost.**
- average cost.
- full cost.
- opportunity cost.

- (12 points)** 2. The village of Forrest Park sold bonds to finance infrastructure maintenance and improvements on January 1, 1999. The bonds have a combined face value of \$5,000,000 and carry a 6% coupon rate paid semiannually on June 30 and Dec 31 each year. The bonds mature in 10 years. The bonds have a call option that allows the Village to buy back the bonds from bondholders at current market prices. The village manager has proposed that the Village exercise its call option and redeem the bonds early. How much must the village of Forrest Park pay to its current bondholders to purchase its bonds on July 1, 2003 if current market interest rates are then 4.5%? (Hint: treat the full 5,000,000 as a single bond and find the bond price)

$$6\%/2 * \$5,000,000 = \$150,000 = \text{PMT}; 11 = N; 4.5\%/2 = I; \text{PV} = \$1,447,367$$

$$\text{FV} = \$5,000,000; N = 11; I = 4.5\%/2; \text{PV} = 3,914,475$$

$$\text{Bond Value} = \$1,447,367 + \$3,914,475 = \$5,361,842$$

- (10 points)** 3. The Wagner Student Association (WSA) is planning a fund raising event for the spring semester. The WSA is planning to hire the Dizzy Gillespie Heritage Band as entertainment for a fee of \$750. The Schomberg Museum was selected as the site for the event. The Museum will charge the WSA \$600 for the use of its banquet room. Sylvia's Restaurant was selected to cater the event. Sylvia's Restaurant will charge the WSA a flat fee of \$400 and a \$20 per meal charge.

- a) **(5 points)** The WSA expects 250 students and alumni to attend its spring fund raising event. What is the minimum (breakeven) ticket price for the WSA's spring fund raising event?

$$\text{Fixed Cost} = \$750 + 600 + 400 = \$1,750; \text{Unit Variable Cost} = \$20;$$

$$\text{BEQ} = 250 \text{ students}$$

$$250 = 1,750 / (p - 20) : p = \$27$$

- b) **(5 points)** The WSA is considering two ticket prices, a \$25 price for students and a \$75 price for alumni. If three students are expected to attend the event for each alumni, how many students and alumni must attend the spring fund raising event if it is to breakeven?

$$\text{Contribution margin on student tickets} = \$25 - \$20 = \$5$$

$$\text{Contribution margin on student tickets} = \$75 - \$20 = \$55$$

$$\text{Weighted average contribution margin} = \$5 * 75\% + \$55 * 25\% = \$17.50$$

$$\text{BEQ} = \$1,750 / \$17.50 = 100: 75 \text{ students and } 25 \text{ alumni}$$

(4 points) 4. Circle the letter of the best available answer to fill the blank.

The Field Foundation's accounting manager prepares reports about the Foundation's grant making, investments, and general administrative activities. The cost of her salaries and fringe benefits would be included as part of the _____ cost of its investment management activity.

- a. Direct cost
- b. Indirect cost**
- c. Variable cost

The Field Foundation pays Ariel Capital Management a fee for managing a portion of its \$155 million investment in stocks and bonds. The cost of this fee would be included as part of the _____ cost of its investment management activity.

- a. Direct cost**
- b. Indirect cost
- c. Variable cost

(4 points) 5. Select the best choice from the following to answer questions A and B:

- A) An increase in the level of service volume will have the following effects:
- a. Increase unit variable cost and decrease unit fixed cost
 - b. Unit variable cost remains constant and unit fixed cost remains constant
 - c. Decrease unit variable cost and unit fixed cost remains constant
 - d. Unit variable cost remains constant and unit fixed cost decrease**
- B) Which one of the following is a name for the range of service volume over which an organization company expects to operate?
- a. Mixed range
 - b. Fixed range
 - c. Variable range
 - d. Relevant range**

(8 points) 6. Dos Agency delivers 2 services: A and B. The projected information for these two services for 2003 are:

	<u>Service A</u>	<u>Service B</u>
Units of service	4,000	1,000
Unit selling price	\$12	\$8
Unit variable cost	8	4
Total fixed costs are projected to be \$10,000.		

Required:

First prepare a line item operating budget for Dos Agency for 2003. Then compute a flexible budget for the Dos Agency assuming a 20% increase in its projected 2003 unit of service volume.

Revenue	\$56,000	\$67,200
Variable cost	36,000	43,200
Fixed cost	<u>10,000</u>	<u>10,000</u>
Total Expenses	\$46,000	\$53,200
Operating Profit	\$10,000	\$14,000

(14 points) 7. Smallville Children Services (SCS) provide adoptions and foster care services. SCS bills the State for its foster care services under a fee for service contract. SCS charges adoptive parents a sliding scale fee based on family income for their adoption services. Fourth quarter 2003 revenues are anticipated to be as follows:

	October	November	December
Adoptions	\$120,000	\$100,000	\$105,000
Foster Care	\$400,000	\$420,000	\$460,000

SCS finds that it collects 40% of the amounts billed to the State for foster care services in the month of service with the balance collected in the month following service. Adoption fees are collected in the month that they are earned.

SCS is planning to acquire three minivans at a total cost of \$75,000 in November 2003. The purchase of the minivans will be financed with a \$75,000 installment loan, with the first payment due in December.

SCS anticipates incurring salaries and fringe benefit expenses of \$480,000 each month. Salaries and fringe benefit expenses are paid as incurred. Monthly depreciation expense is \$15,000. SCS plans to use food and office supplies at a total expense of \$18,000 during the month of November 2003, but cash payments to suppliers are expected to be \$16,000.

Assume that SCS has a cash balance of \$40,000 on October 31, 2003.

Prepare a cash budget for the month of November 2003.

Opening Cash Balance		\$ 40,000
Cash Receipts		
Adoptions	\$100,000	
Foster Care	\$408,000	
Total Cash Receipts		\$508,000
Available Cash		\$548,000
Cash Disbursements		
Salaries & Fringe Benefits	\$480,000	
Food and Office Supplies	16,000	
Minivan Purchase	75,000	
Total Cash Disbursements		\$571,000
Subtotal		\$(23,000)
Financing		\$ 75,000
Ending Balance		\$ 52,000

(15 points) 8. Prospect City is considering two contractors, A and B, to resurface Broad Street. Contractor A bid \$30,000 for the job and, with annual maintenance of \$1,500, will guarantee the surface for five years. Contractor B bid \$24,000 for the job and, with annual maintenance of \$2,000, will guarantee the surface for six years. Assuming a discount rate of 6%, which contractor should Prospect City chose?

	A	B
NPC	\$36,318.55	\$33,834.65
ANNUALIZED COST	\$8,621.89	\$6,880.70

Prospect City should chose contractor B since it can pave Broad Street at the lowest annualized cost.

(15 points) 9. Cavalier Skilled Nursing Homes is considering setting up a new facility to serve the Bronx. Management estimates that it will cost \$1.5 million to purchase the necessary equipment and renovate the building to support its long term care services. The projected net cash flows generated by the new facility over the next five years is given below:

Year 1	-0-
Year 2	\$380,000
Year 3	\$400,000
Year 4	\$420,000
Year 5	\$440,000

Assuming a five year life and 8% cost of capital, compute the net present value of this proposal. On the merits of your net present value computation, should Cavalier Skilled Nursing Homes pursue the project?

	FV	PV
Year 1	-0-	\$ -0-
Year 2	\$380,000	\$325,789
Year 3	\$400,000	\$317,533
Year 4	\$420,000	\$308,713
Year 5	\$440,000	\$299,457

$$NPV = 325,789 + 317,533 + 308,713 + 299,457 - 1,500,000 = \$(248,508)$$

Cavalier Skilled Nursing Homes should not set up a new facility in the Bronx since the NPV is negative.

(10 points) 10. The nurses in the intensive care unit of Merryville Hospital provided an average of 5 hours per patient at an average wage of \$24 per hour. The actual number of patients served was 90. Merryville budgeted for 95 patients at 6 hours per patient and an average wage of \$22. Compute the total variance, volume variance, rate variance, and efficiency variance for Merryville Hospital's nursing salary expense in intensive care unit. Indicate whether the variance is favorable (F) or unfavorable (U) for each of the four variances.

Total budget = $95 * 6 * 22 = \$12,540$: Total actual = $90 * 5 * 24 = \$10,800$

Total variance = $\$10,800 - \$12,540 = \$1,740$ F

Rate variance = $(24 - 22) * 5 * 90 = \$900$ U

Quantity variance = $(5 - 6) * 22 * 90 = \$1,980$ F

Volume variance = $(90 - 95) * 22 * 6 = \$660$ F