PROGRAM ARTICULATION DE	LONLETERIA				
Lewis & Clark Community Co			Southern Illinois University Carbondale		
AAS Instrumentation and Contro	ol Systems - 60 hours		Electrical Engineering Technology (EET) - 1		
			University Core Curriculum (UCC) Capst	one Option - 30 hrs	
		Hrs			Hrs
			UNIV 101	Saluki Success	NA
SPC 131 -or- SPC 145	Public Speaking -or- Public and Private Communic	ation 3	CMST 101	Intro to Oral Communication	T
ENGL 131	First Year English	3	ENGL 101	English Composition I	Т
			ENGL 102	English Composition II	NA
MATH 134*	Pre-Calculus	5	MATH 111 (Required for BS degree)	Precalculus	T
	IAI Social Science	3	SOCIAL SCIENCE	(See SIUC Equivalency Guide)	Т
			SOCIAL SCIENCE	(1000 0.00 = 40.000)	3
	IAI Humanities/Fine Arts	3	HUMANITIES	(See SIUC Equivalency Guide)	Ť
	i i i i i i i i i i i i i i i i i i i		HUMANITIES	(Goo Groo Equivalency Guide)	NA NA
PHYS 125	Applied Physics I	4	PHYS 203/253A (Required for BS degree)	College Physics/Lab	T
	Applied Physics I	4	LIFE SCIENCE, GRP II		NA
				Students take 2 physics courses	
			FINE ARTS		3 _
			BIOL 202	Human Genetics and Human Health	2
			MULTICULTURAL		3
		21			11
Program Requirements			Program Requirements		
CIS 210*	Intro Java Programming	3	CS 202 (Required for BS degree)	Intro to Computer Science	Т
CIS 235*	C++ Programming Language	3	ECE 222 (Required for BS degree)	Computational Methods for Engineers & Technologists	Т
INST 131	DC Fundamentals in Electricity	3	EET 150 (Required for BS degree)	Intro to EET	Т
	AC Fundamentals in Electricity	3	EET 245 (Required for BS degree)	Intro Circuit Theory & Application	T
INST 132					Ť
INST 132 PHVS 132*		4	PHVS 203/253B (Required for BS degree)	College Physics/Lah	
PHYS 132*	Intro to Physics II	4	PHYS 203/253B (Required for BS degree)	College Physics/Lab	<u> </u>
PHYS 132* INST 133	Intro to Physics II Digital Electronics	6	PHYS 203/253B (Required for BS degree)	College Physics/Lab	I
PHYS 132* INST 133 INST 135	Intro to Physics II Digital Electronics Motor Controls	6 3	PHYS 203/253B (Required for BS degree)	College Physics/Lab	1
PHYS 132* INST 133 INST 135 INST 231	Intro to Physics II Digital Electronics Motor Controls PLC Programming	6 3 3			
PHYS 132* INST 133 INST 135 INST 231 INST 233	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I	6 3 3 3	The AAS degree in Instrumentation a	and Control Systems as articulated fulfills the 7 hrs of	technical
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 235	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II	6 3 3 3 3	The AAS degree in Instrumentation a		technical
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 235 INST 235	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements	6 3 3 3 3 3	The AAS degree in Instrumentation a	and Control Systems as articulated fulfills the 7 hrs of	technical
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 235 INST 235 INST 237 INST 239	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II	6 3 3 3 3 3 3	The AAS degree in Instrumentation a	and Control Systems as articulated fulfills the 7 hrs of	technical
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 235 INST 235	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a	and Control Systems as articulated fulfills the 7 hrs of	technical
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 235 INST 235 INST 237 INST 239	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control	6 3 3 3 3 3 3	The AAS degree in Instrumentation a	and Control Systems as articulated fulfills the 7 hrs of	technical
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 235 INST 235 INST 237 INST 239	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a	and Control Systems as articulated fulfills the 7 hrs of	technical
PHYS 132* INST 133 INST 135 INST 231 INST 231 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements	and Control Systems as articulated fulfills the 7 hrs of for the BS degree in Electrical Engineering Technolog	technical ly.
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 235 INST 237 INST 237 INST 239	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements	and Control Systems as articulated fulfills the 7 hrs of for the BS degree in Electrical Engineering Technolog	technical y.
PHYS 132* INST 133 INST 135 INST 231 INST 231 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements  MATH 150  MATH 282	and Control Systems as articulated fulfills the 7 hrs of for the BS degree in Electrical Engineering Technolog  Calculus I Statistics Business Communication	technical y.
PHYS 132* INST 133 INST 135 INST 231 INST 231 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements  MATH 150  MATH 282  MGMT 202  EET 238	and Control Systems as articulated fulfills the 7 hrs of for the BS degree in Electrical Engineering Technolog  Calculus I Statistics Business Communication Digital System Fundamentals	technical y.
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements  MATH 150  MATH 282  MGMT 202  EET 238  EET 304A	and Control Systems as articulated fulfills the 7 hrs of for the BS degree in Electrical Engineering Technolog Calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application	technical y.
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements  MATH 150  MATH 282  MGMT 202  EET 238  EET 304A  EET 304B	and Control Systems as articulated fulfills the 7 hrs of for the BS degree in Electrical Engineering Technolog Calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application Network Theory and Application	technical y.
PHYS 132* INST 133 INST 135 INST 231 INST 231 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements  MATH 150 MATH 282 MGMT 202 EET 238 EET 304A EET 304B EET 332A	and Control Systems as articulated fulfills the 7 hrs of for the BS degree in Electrical Engineering Technolog Calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application Network Theory and Application DC Motors, Generators & Energy Conversion Devices	technical y.
PHYS 132* INST 133 INST 135 INST 231 INST 231 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements  MATH 150 MATH 282 MGMT 202 EET 238 EET 304A EET 304B EET 332A EET 332B	calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application Network Theory and Application DC Motors, Generators & Energy Conversion Devices AC Electric Machines & Power Systems	technical y.
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements  MATH 150 MATH 282 MGMT 202 EET 238 EET 304A EET 304B EET 332A EET 332B EET 403A	and Control Systems as articulated fulfills the 7 hrs of for the BS degree in Electrical Engineering Technolog Calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application Network Theory and Application DC Motors, Generators & Energy Conversion Devices AC Electric Machines & Power Systems Electronic Circuit Analysis	technical y.
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements  MATH 150 MATH 282 MGMT 202 EET 238 EET 304A EET 304B EET 304B EET 332A EET 332B EET 403A EET 403A	and Control Systems as articulated fulfills the 7 hrs of for the BS degree in Electrical Engineering Technolog  Calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application Network Theory and Application DC Motors, Generators & Energy Conversion Devices AC Electric Machines & Power Systems Electronic Circuit Analysis Electronics Application and Design	technical y.
PHYS 132* INST 133 INST 135 INST 231 INST 231 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements  MATH 150  MATH 282  MGMT 202  EET 238  EET 304A  EET 304B  EET 304B  EET 332A  EET 403A  EET 403A  EET 403B  EET 437A	and Control Systems as articulated fulfills the 7 hrs of for the BS degree in Electrical Engineering Technolog  Calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application Network Theory and Application DC Motors, Generators & Energy Conversion Devices AC Electric Machines & Power Systems Electronic Circuit Analysis Electronics Application and Design Telecommunication Systems Fundamentals	technical y.
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements  MATH 150 MATH 282 MGMT 202 EET 238 EET 304A EET 304B EET 332A EET 332B EET 403A EET 403A EET 403B EET 437A EET 437B	and Control Systems as articulated fulfills the 7 hrs of for the BS degree in Electrical Engineering Technolog Calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application Network Theory and Application DC Motors, Generators & Energy Conversion Devices AC Electric Machines & Power Systems Electronic Circuit Analysis Electronics Application and Design Telecommunication Systems Fundamentals Data and Computer Communication	technical y.
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements  MATH 150  MATH 282  MGMT 202  EET 238  EET 304A  EET 304B  EET 304B  EET 332A  EET 403A  EET 403A  EET 403B  EET 437A	and Control Systems as articulated fulfills the 7 hrs of for the BS degree in Electrical Engineering Technolog  Calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application Network Theory and Application DC Motors, Generators & Energy Conversion Devices AC Electric Machines & Power Systems Electronic Circuit Analysis Electronics Application and Design Telecommunication Systems Fundamentals	technical y.
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements  MATH 150 MATH 282 MGMT 202 EET 238 EET 304A EET 304B EET 332A EET 332B EET 403A EET 403A EET 403B EET 437A EET 437B	and Control Systems as articulated fulfills the 7 hrs of for the BS degree in Electrical Engineering Technolog Calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application Network Theory and Application DC Motors, Generators & Energy Conversion Devices AC Electric Machines & Power Systems Electronic Circuit Analysis Electronics Application and Design Telecommunication Systems Fundamentals Data and Computer Communication	technical y.
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements  MATH 150 MATH 282 MGMT 202 EET 238 EET 304A EET 304B EET 332A EET 332B EET 403A EET 403A EET 403B EET 437A EET 437B EET 438A	calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application Network Theory and Application DC Motors, Generators & Energy Conversion Devices AC Electric Machines & Power Systems Electronic Circuit Analysis Electronics Application and Design Telecommunication Systems Fundamentals Data and Computer Communication Automatic Control Systems Technology	technical y.
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements  MATH 150 MATH 282 MGMT 202 EET 238 EET 304A EET 304B EET 332A EET 332B EET 403A EET 403B EET 47A EET 478B EET 437B EET 437B EET 438A EET 438B	and Control Systems as articulated fulfills the 7 hrs of for the BS degree in Electrical Engineering Technolog  Calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application Network Theory and Application DC Motors, Generators & Energy Conversion Devices AC Electric Machines & Power Systems Electronic Circuit Analysis Electronics Application and Design Telecommunication Systems Fundamentals Data and Computer Communication Automatic Control Systems Technology Sequential Digital Control and Data Acquisition Microcontroller Application and Design	technical y.
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements  MATH 150 MATH 282 MGMT 202 EET 238 EET 304A EET 304B EET 332A EET 332A EET 403A EET 403A EET 403B EET 443A EET 437B EET 437B EET 438B EET 438B EET 438B EET 439 EET 495A	and Control Systems as articulated fulfills the 7 hrs of for the BS degree in Electrical Engineering Technolog Calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application Network Theory and Application DC Motors, Generators & Energy Conversion Devices AC Electric Machines & Power Systems Electronic Circuit Analysis Electronic Circuit Analysis Electronic Application and Design Telecommunication Systems Fundamentals Data and Computer Communication Automatic Control Systems Technology Sequential Digital Control and Data Acquisition Microcontroller Application and Design Electrical Engineering Technology Senior Design I	technical y.
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 235 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements  MATH 150 MATH 282 MGMT 202 EET 238 EET 304A EET 304B EET 304B EET 332B EET 403A EET 403B EET 403B EET 437A EET 437B EET 437B EET 438A EET 438B EET 439	and Control Systems as articulated fulfills the 7 hrs of for the BS degree in Electrical Engineering Technolog  Calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application Network Theory and Application DC Motors, Generators & Energy Conversion Devices AC Electric Machines & Power Systems Electronic Circuit Analysis Electronics Application and Design Telecommunication Systems Fundamentals Data and Computer Communication Automatic Control Systems Technology Sequential Digital Control and Data Acquisition Microcontroller Application and Design	technical yy.  4 3 3 3 4 4 4 4 4 4 4 1 1 1
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3	The AAS degree in Instrumentation a elective course requirements  MATH 150 MATH 282 MGMT 202 EET 238 EET 304A EET 304B EET 332A EET 332A EET 403A EET 403A EET 403B EET 443A EET 437B EET 437B EET 438B EET 438B EET 438B EET 439 EET 495A	and Control Systems as articulated fulfills the 7 hrs of for the BS degree in Electrical Engineering Technolog Calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application Network Theory and Application DC Motors, Generators & Energy Conversion Devices AC Electric Machines & Power Systems Electronic Circuit Analysis Electronic Circuit Analysis Electronic Application and Design Telecommunication Systems Fundamentals Data and Computer Communication Automatic Control Systems Technology Sequential Digital Control and Data Acquisition Microcontroller Application and Design Electrical Engineering Technology Senior Design I	technical ly.  4 3 3 3 4 4 4 4 4 4 4 4 4 1
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 235 INST 237 INST 239 INST 271 *Recommended to fulfill SIUC E	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3 41-44	The AAS degree in Instrumentation a elective course requirements  MATH 150 MATH 282 MGMT 202 EET 238 EET 304A EET 304B EET 332A EET 332B EET 403A EET 403B EET 4703B EET 4437B EET 437B EET 437B EET 438B EET 438B EET 439 EET 495A EET 495B	calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application DC Motors, Generators & Energy Conversion Devices AC Electric Machines & Power Systems Electronic Circuit Analysis Electronic Circuit Analysis Electronic Sapplication and Design Telecommunication Systems Fundamentals Data and Computer Communication Automatic Control Systems Technology Sequential Digital Control and Data Acquisition Microcontroller Application and Design Electrical Engineering Technology Senior Design I Electrical Engineering Technology Senior Design II	technical y.  4 3 3 3 4 4 4 4 4 4 4 1 1 59
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 235 INST 237 INST 239 INST 271 *Recommended to fulfill SIUC E	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3 41-44	The AAS degree in Instrumentation a elective course requirements  MATH 150 MATH 282 MGMT 202 EET 238 EET 304A EET 304B EET 332A EET 332A EET 403A EET 403A EET 403B EET 443A EET 437B EET 437B EET 438B EET 438B EET 438B EET 439 EET 495A	calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application DC Motors, Generators & Energy Conversion Devices AC Electric Machines & Power Systems Electronic Circuit Analysis Electronic Circuit Analysis Electronic Sapplication and Design Telecommunication Systems Fundamentals Data and Computer Communication Automatic Control Systems Technology Sequential Digital Control and Data Acquisition Microcontroller Application and Design Electrical Engineering Technology Senior Design I Electrical Engineering Technology Senior Design II	technical yy.  4 3 3 3 4 4 4 4 4 4 4 1 1 1
PHYS 132* INST 133 INST 135 INST 231 INST 233 INST 233 INST 235 INST 237 INST 239 INST 271	Intro to Physics II Digital Electronics Motor Controls PLC Programming Instrumentation I Instrumentation II Final Control Elements PID Control Instrumentation Tech Internship	6 3 3 3 3 3 3 1-3 41-44	The AAS degree in Instrumentation a elective course requirements  MATH 150 MATH 282 MGMT 202 EET 238 EET 304A EET 304B EET 332A EET 332B EET 403A EET 403B EET 4703B EET 4437B EET 437B EET 437B EET 438B EET 438B EET 439 EET 495A EET 495B	calculus I Statistics Business Communication Digital System Fundamentals AC/DC Circuit Theory and Application DC Motors, Generators & Energy Conversion Devices AC Electric Machines & Power Systems Electronic Circuit Analysis Electronic Circuit Analysis Electronic Sapplication and Design Telecommunication Systems Fundamentals Data and Computer Communication Automatic Control Systems Technology Sequential Digital Control and Data Acquisition Microcontroller Application and Design Electrical Engineering Technology Senior Design I Electrical Engineering Technology Senior Design II	technical y.  4 3 3 3 4 4 4 4 4 4 4 1 1 59