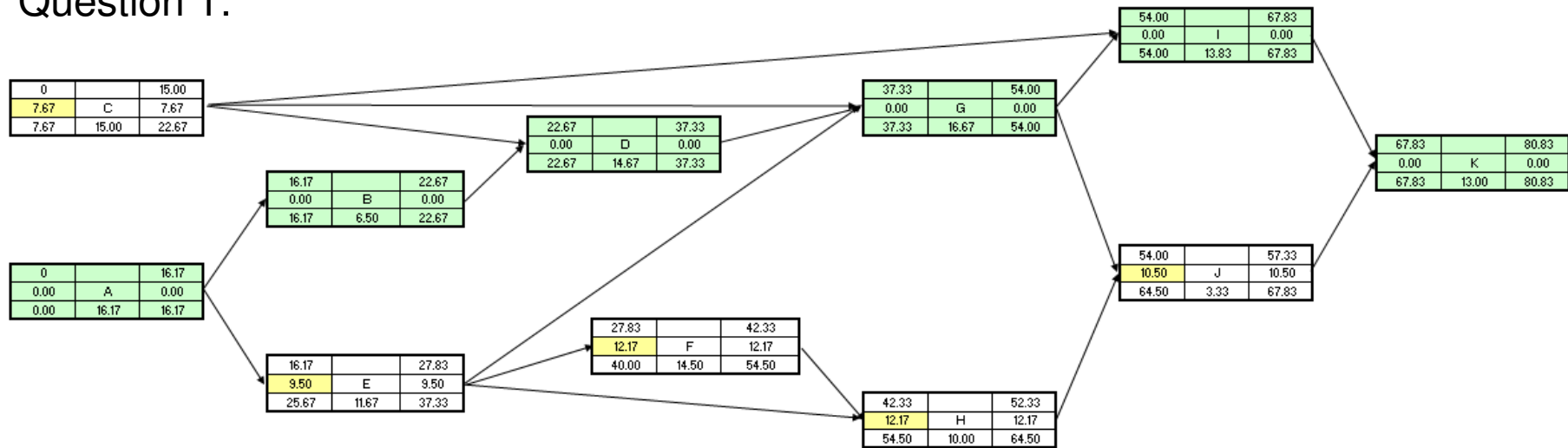




## CEE 9510 Assignment 2 Answer Key

### Question 1:

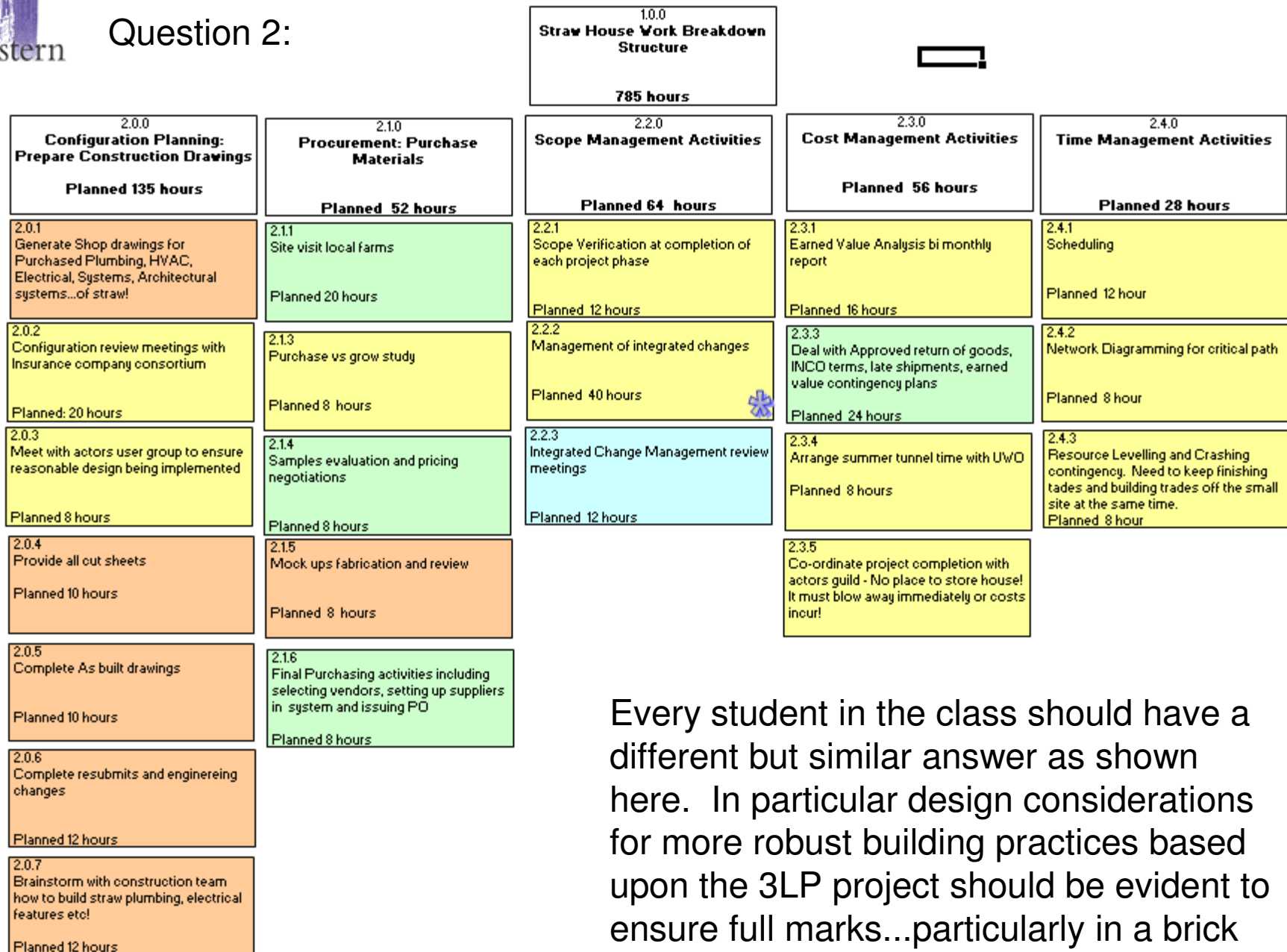


The critical path is shown in green. The slack available for each activity is shown in Yellow. Note the absence of slack on the critical path.

Activity	Preceding activity	Best	Likely	Worst	Time est. (TE)
a	0	12	15	25	16.17
b	a	4	6	11	6.50
c	0	12	12	30	15.00
d	b,c	8	15	20	14.67
e	a	7	12	15	11.67
f	e	9	9	42	14.50
g	c,d,e	13	17	19	16.67
h	e,f	5	10	15	10.00
i	c,g	11	13	20	13.83
j	g,h	2	3	6	3.33
k	j,i	8	12	22	13.00

ES		EF
Slack	Activity	Slack check
LS	Time Est	LF

## Question 2:



Every student in the class should have a different but similar answer as shown here. In particular design considerations for more robust building practices based upon the 3LP project should be evident to ensure full marks...particularly in a brick house design. 3 full WBSs required.

2.5.0 Other Project Management Core Disciplines  Planned 46 hours	2.6.0 Execution Activities  Planned 300 hours	2.7.0 Closure Activities  Planned 44 hours	2.8.0 Monitoring and Controlling Activities  Planned 70 hours
2.5.1 Risk - Expected Monetary Value Studies for timing of straw purchases and different vendor opportunities  Planned 8 hours	2.6.1 Build straw floors by mixing matted straw with resin  Planned 50 hours	2.7.1 Lessons Learned  Planned: 16 hours	2.8.2 Quality Control to control plan  Planned 10 hours
2.5.2 Provide sensitivity training to staff who will be working with pigs and actors  Planned: 8 hours	2.6.2 Weave Straw Walls  Planned 50 hours	2.7.2 Contractual Closure  Planned: 8 hours	2.8.3 Generate checklists and organize Major mechanical and electrical straw equipment commissioning  Planned: 20 hours
2.5.3 Training construction staff for working with straw, the necessary storage methods, the drying methods, the coloring methods	2.6.3 Braid Straw Beams  Planned 30 hours	2.7.3 Line by Line Specification review for compliance and punch list  Planned 20 hours	2.8.4 Redistribute staff to next postings  Planned: 20 hours
2.5.4 Quality planning and assurance  Planned: 15 hours	2.6.5 Mud external areas for rigidity and lash sections with hemp rope  Planned 60 hours		2.8.5 Protect Wind tunnel from material projectiles  Planned: 20 hours
	2.6.6 Bale straw for compression loading areas such as stairs  Planned 30 hours		
	2.6.7 fine trades work for architectural features such as windows, porch etc.  Planned 20 hours		
	2.6.8 Final subsection assemblies including finishing touches such as affixing wind sock, weather vane, and flag  Planned 50 hours		
	2.6.9 Install straw systems and final Paint  Planned 10 hours		

- By the support overhead staff assigned to the team
- By the Construction workers on the team
- Project Manager
- By Engineering and Technical Planning workers on team



A separate sheet exists for the next level.  
Click on asterix to go to the next level

Straw House example shown here.  
Wood and Brick to be similar.

WGH WBS sheet

Task	Change Notice	Print Reference	Product line	Print Reference	Product Lines	Planned Hours	Actual Hours
2.2.2.1	1	straw-E-001	straw light fixtures	0008-0005	Pigs 35	15	
2.2.2.2	2	straw-M-001	straw furnace	0008-0006	Pigs 98	15	
2.2.2.3	3	straw-A-001	porch w Muskoka chair	0007-0006	Pigschair	10	
2.2.2.4	4						
2.2.2.5	5						
2.2.2.6	6						
2.2.2.7	7						
2.2.2.8	8						
2.2.2.9	9						
2.2.2.10	10						
2.2.2.11	11						
2.2.2.12	12						
2.2.2.13	13						
2.2.2.14	14						
2.2.2.15	15						
2.2.2.16	16						
2.2.2.17	17						
2.2.2.18	18						
2.2.2.19	19						
2.2.2.20	20						
2.2.2.21	21						
2.2.2.22	22						
2.2.2.23	23						
2.2.2.24							
Total						40	0



Task	Area	Location	Style	Print Reference	Product	Planned Hours	Actual Hours
2.6.2.1	kitchen	north	celtic	0008-0007	dream weaver	20	
2.6.2.2	exterior	north east	laminated	0008-0006	heavy set	20	
2.6.2.3	kitchen	east	celtic	0008-0006	dream weaver	10	
2.6.2.4							
2.6.2.5							
2.6.2.6							
2.6.2.7							
2.6.2.8							
2.6.2.9							
2.6.2.10							
2.6.2.11							
2.6.2.12							
2.6.2.13							
2.6.2.14							
2.6.2.15							
2.6.2.16							
2.6.2.17							
2.6.2.18							
2.6.2.19							
2.6.2.20							
2.6.2.21							
2.6.2.22							
2.6.2.23							
2.6.2.24							
total						50	0



WGH WBS sheet

Task	Location	% of labor to apply	Hours Planned	Hours Actual
2.6.1.1	hall 1	0.17	10	
2.6.1.2	hall 2	0.17	10	
2.6.1.3	kitchen	0.08	10	
2.6.1.4	living room	0.03	10	
2.6.1.5	bathroom	0.03	10	
2.6.1.6				
2.6.1.7				
2.6.1.8				
2.6.1.9				
2.6.1.10				
Grand Total			50	0

Three Little Pigs Marketing Project								
Task	Construction		PM		Support Staff		Eng and Tech	
	Planned Hours	Actual Hours	Planned Hours	Actual Hours	Planned Hours	Actual Hours	Planned Hours	Actual Hours
<b>1.0.0 Straw House WORK BREAKDOWN STRUCTURE</b>								
<b>2.0.0 Configuration Planning</b>								
2.0.1 Generate Shop Drawings							53	
2.0.2 configuration Meetings			20					
2.0.3 User Group Meetings			8					
2.0.4 Cut Sheets							10	
2.0.5 Complete As Built Drawings							10	
2.0.6 Complete Resubmittals and Engineering Changes (SDC)							12	
2.07 Brainstorm technical co-ordination solutions							12	
<b>2.1.0 Procurement</b>								
2.1.1 Site visit farms					20			
2.1.2 Purchase vs grow studies			8					
2.1.3 Sample Evaluations and Pricing					8			
2.1.4 Mock Ups							8	
2.1.5 Final Purchasing Activities					8			
<b>2.2.0 Scope</b>								
2.2.1 Scope Verification			12					
<u>2.2.2 Manage Integrated Changes</u>			40					
2.2.3 Integrated Change Management Review Meetings					12			
<b>2.3.0 Cost</b>								
2.3.1 Earned Value Analysis			16					
2.3.2 Returned Goods Authorizations					24			
2.3.3 Book Summer Tunnel Time			8					
2.3.4 Co-ordinate with Actors Guild to ensure no out of season costs			8					
<b>2.4.0 Time</b>								
2.4.1 Scheduling			12					
2.4.2 Network Diagramming			8					
2.4.3 Resource Levelling and Crashing (if necessary)			8					

Free Little Pigs Marketing Project								
Task	Construction		PM		Support Staff		Eng and Tech	
	Planned Hours	Actual Hours	Planned Hours	Actual Hours	Planned Hours	Actual Hours	Planned Hours	Actual Hours
2.5.0 Other PM Disciplines								
2.5.1 Expected Monetary Value Study			8					
2.5.2 Sensitivity training					8			
2.5.3 Straw Materials training	15							
2.5.4 Quality Planning and Assurance					15			
2.6.0 Execution								
2.6.1 Build Straw Floors	50							
2.6.2 Weave Straw Walls	50							
2.6.3 Braid Straw Beams	30							
2.6.4 Mud External Areas	60							
2.6.5 Bale Straw for compression areas	30							
2.6.6 Fine Trades work	20							
2.6.7 Final Assemblies	50							
2.6.8 Install systems and paint structure	10							
2.7.0 Closure								
2.7.1 Lessons Learned			16					
2.7.2 Contractural closure					8			
2.7.3 Line by Line spec review			20					
2.8.0 Controlling and Monitoring								
2.8.1 Quality Control					10			
2.8.2 Commissioning Checklists	20							
2.8.3 Redistribute Staff			20					
2.8.4 Protect Wind Tunnel	20							
Total hours Planned and Actual	355	0	212	0	113		105	0
Deviation by Department								
Total Deviation	0							
Original Est Hours	785							