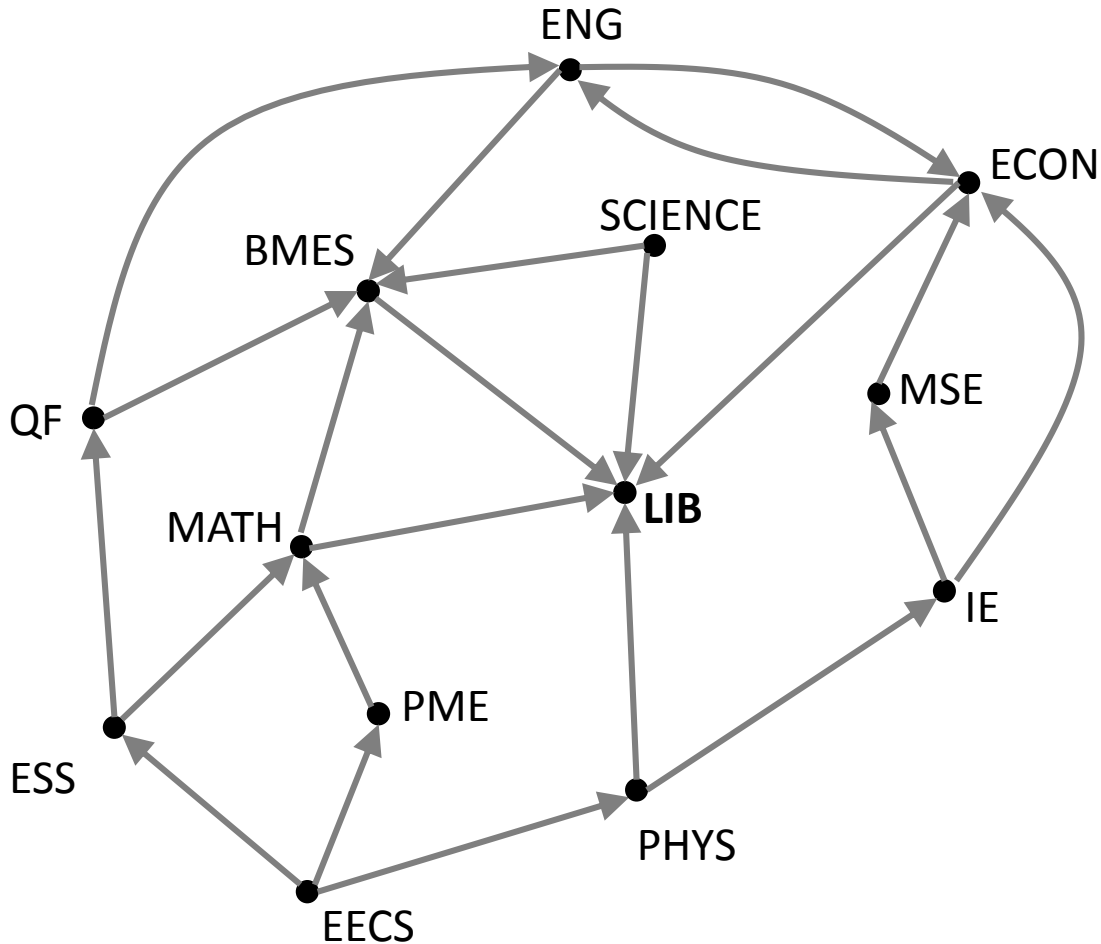


# 10520EE241000 Data Structure Quiz, 2017.06.03

S/N \_\_\_\_\_ Student ID \_\_\_\_\_ Name \_\_\_\_\_

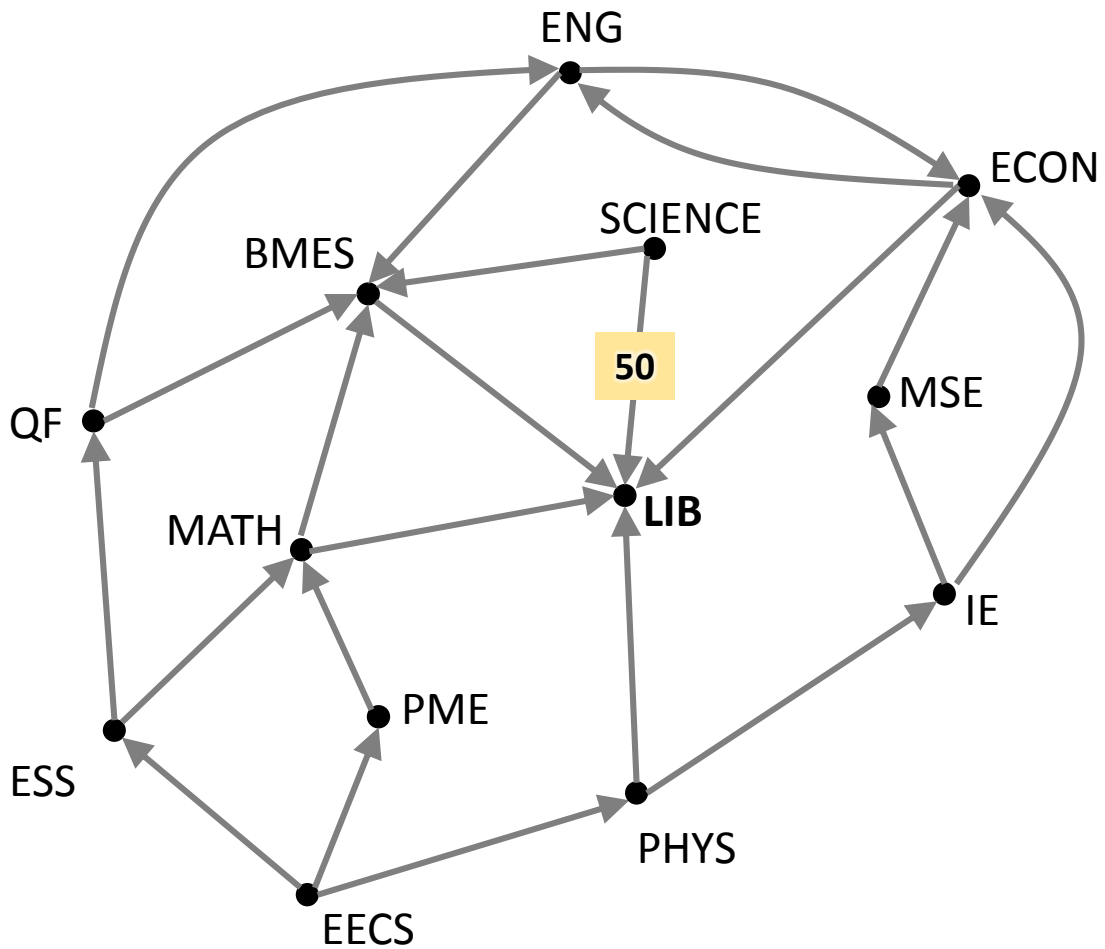
The following graph shows the network of NTHU. Please add network latency numbers on the edges so that the minimum-latency paths match what is specified in the table.



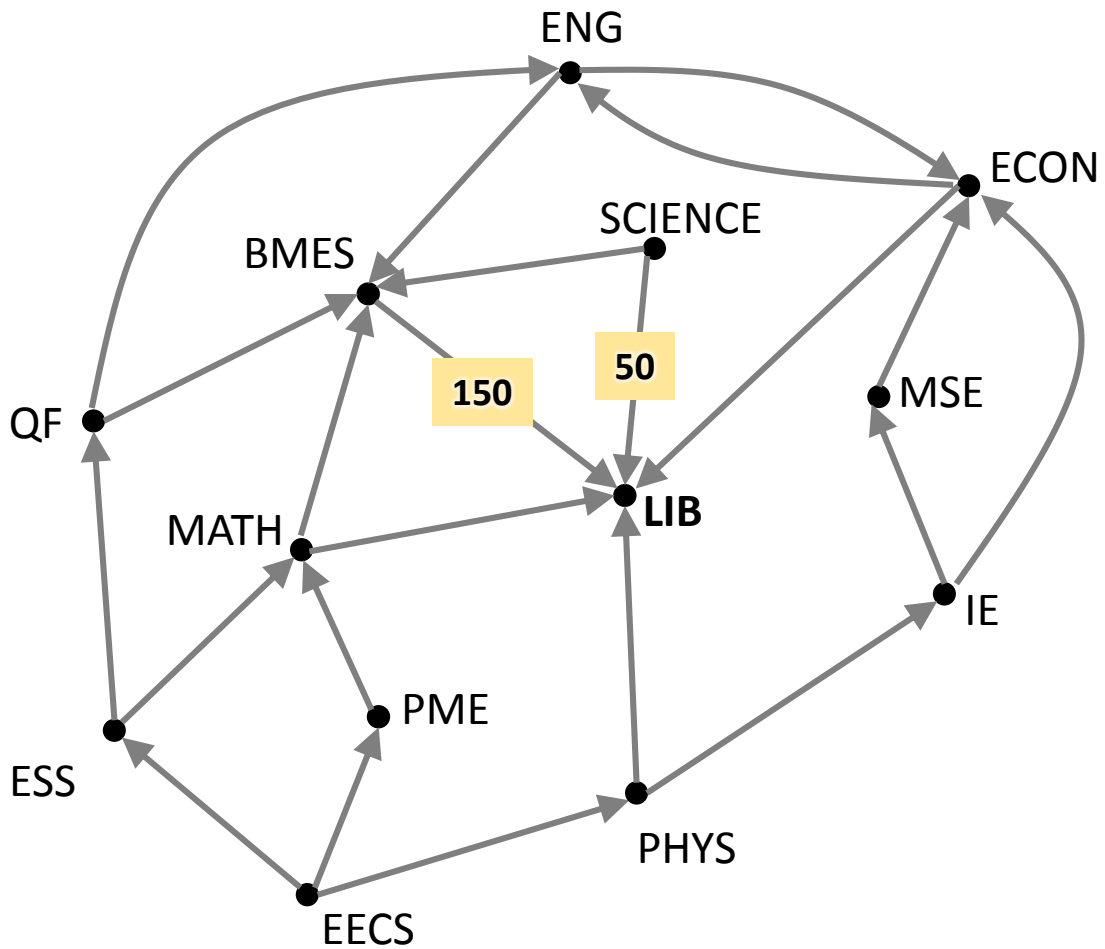
Source	Dest.	Min-latency path	
		Num. of edges	Latency
ENG	LIB		200
QF		3	350
ESS		2	400
EECS		2	700
BMES			150
MATH			150
PME			350
SCIENCE			50
PHYS		5	550
ECON		1	250
MSE			300
IE			400

Solution

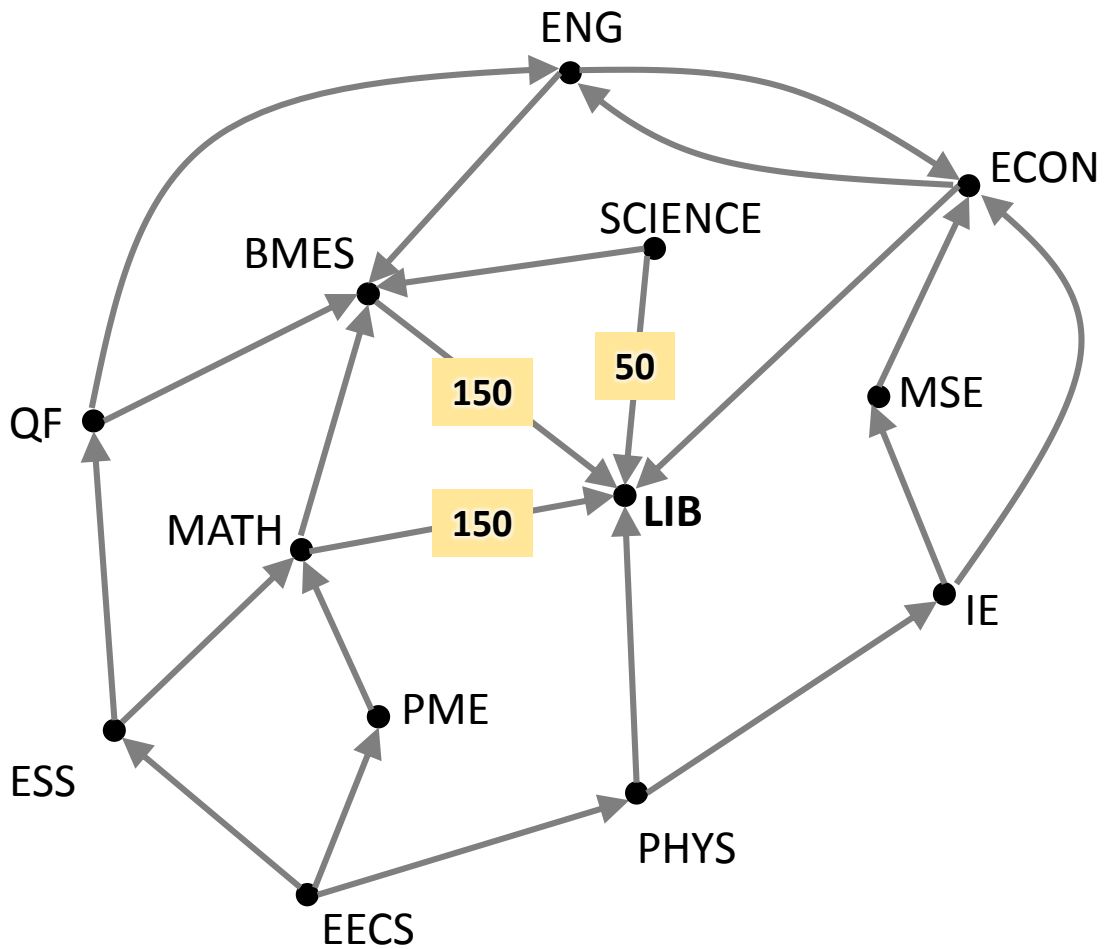




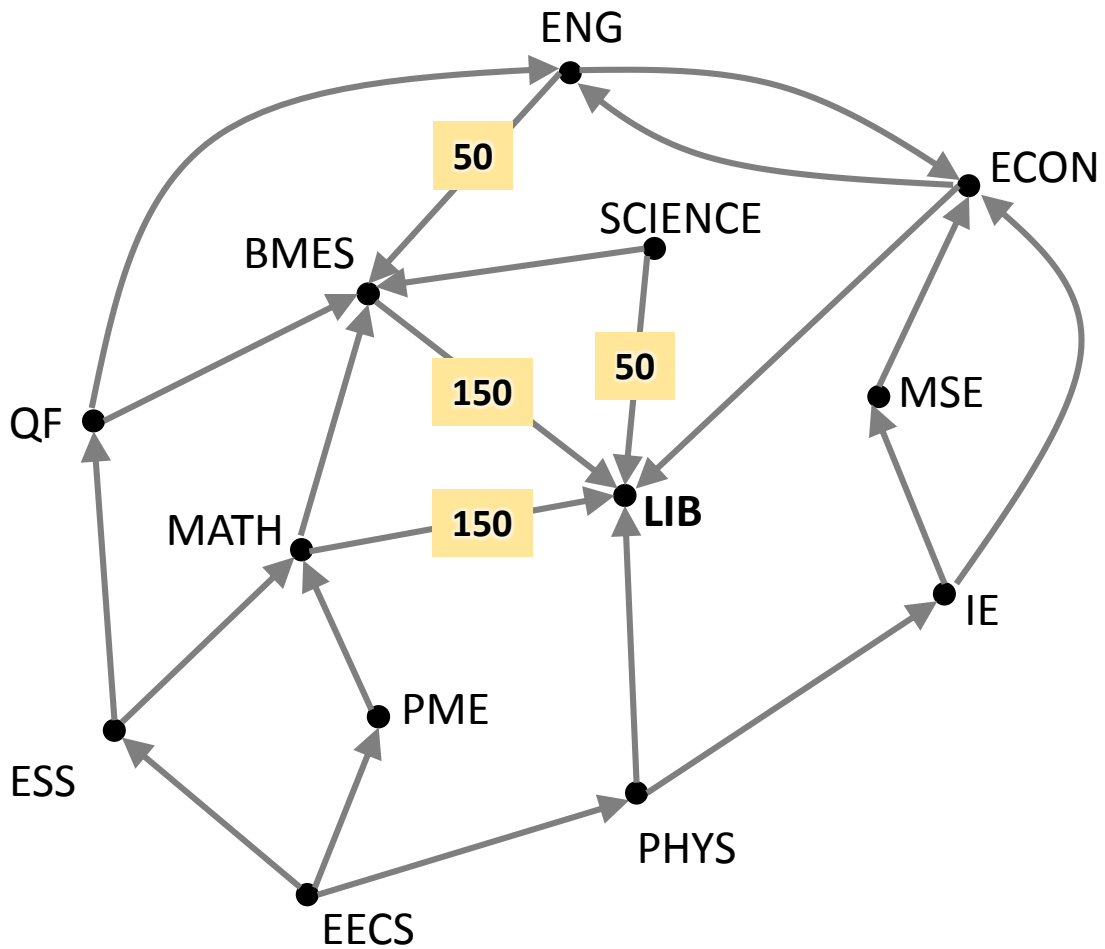
Source	Dest.	Min-latency path	
		Num. of edges	Latency
ENG	LIB		200
QF		3	350
ESS		2	400
EECS		2	700
BMES			150
MATH			150
PME			350
SCIENCE			50
PHYS		5	550
ECON		1	250
MSE			300
IE			400



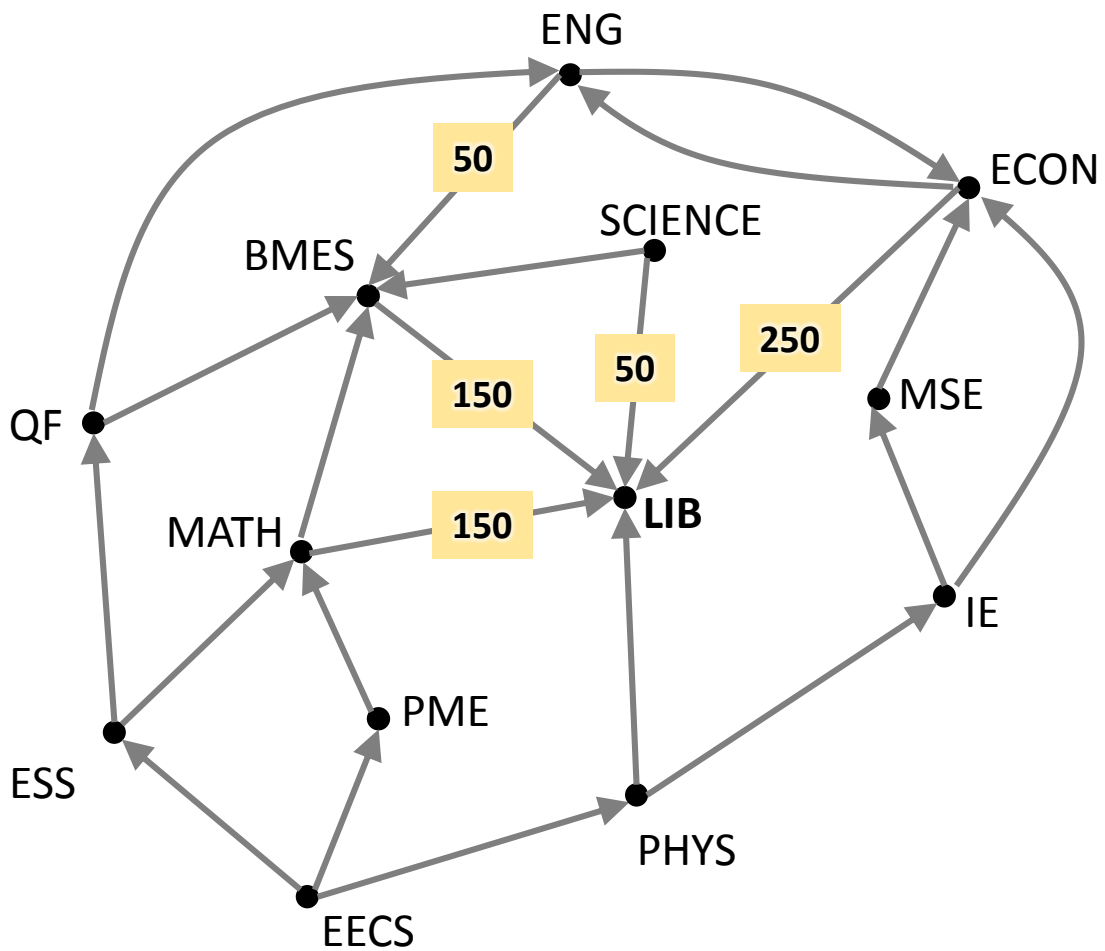
Source	Dest.	Min-latency path	
		Num. of edges	Latency
ENG	LIB		200
QF		3	350
ESS		2	400
EECS		2	700
BMES			150
MATH			150
PME			350
SCIENCE			50
PHYS		5	550
ECON		1	250
MSE			300
IE			400



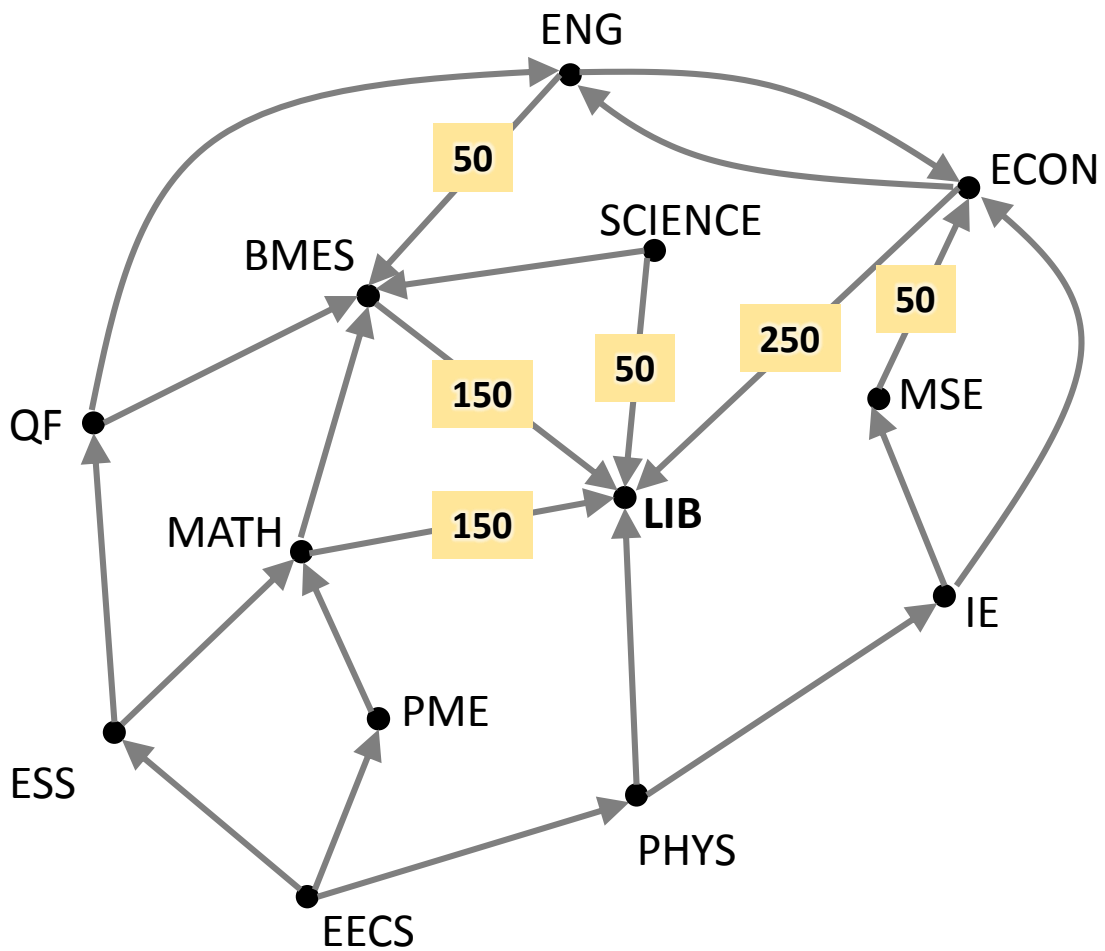
Source	Dest.	Min-latency path	
		Num. of edges	Latency
ENG	LIB	/ / / / /	200
QF		3	350
ESS		2	400
EECS		2	700
BMES		/ / / / /	150
MATH		/ / / / /	150
PME		/ / / / /	350
SCIENCE		/ / / / /	50
PHYS		5	550
ECON		1	250
MSE		/ / / / /	300
IE		/ / / / /	400



Source	Dest.	Min-latency path	
		Num. of edges	Latency
ENG	LIB		200
QF		3	350
ESS		2	400
EECS		2	700
BMES			150
MATH			150
PME			350
SCIENCE			50
PHYS		5	550
ECON		1	250
MSE			300
IE			400

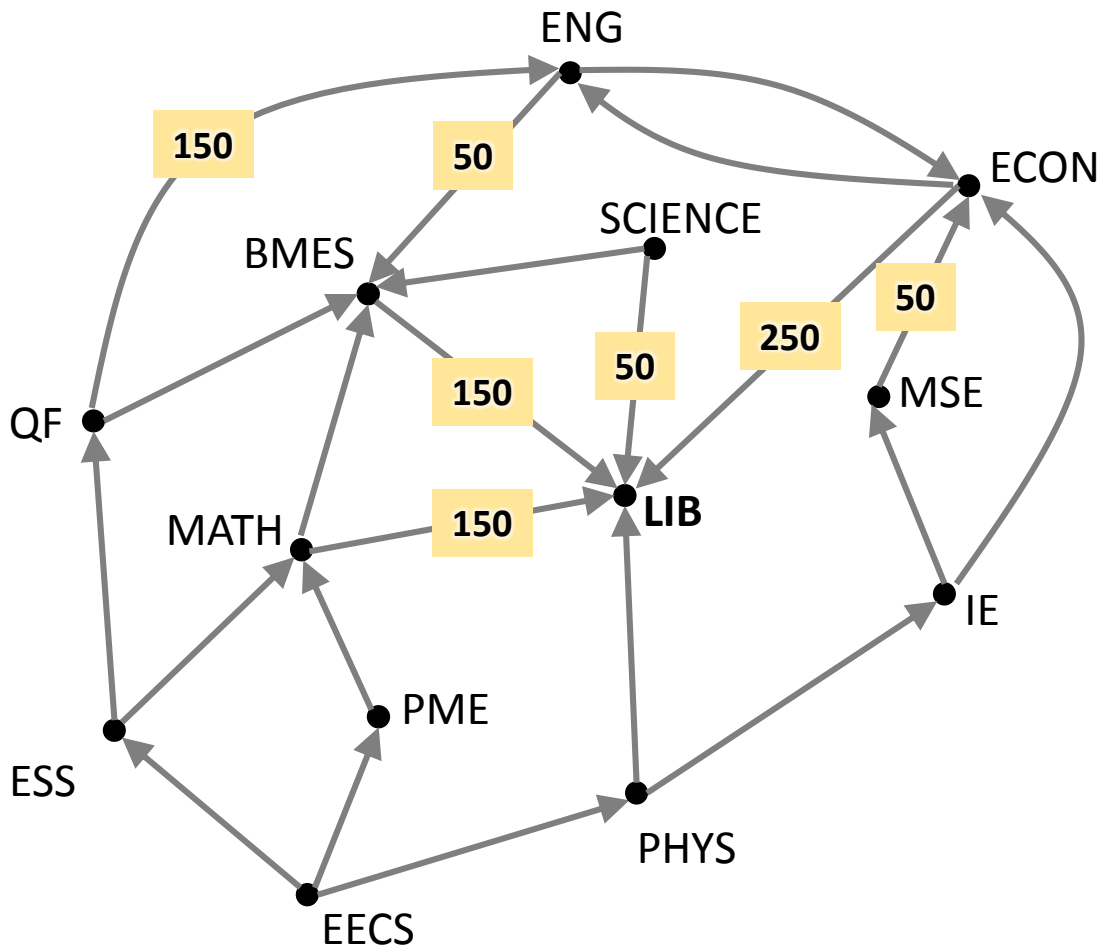


Source	Dest.	Min-latency path	
		Num. of edges	Latency
ENG	LIB		200
QF		3	350
ESS		2	400
EECS		2	700
BMES			150
MATH			150
PME			350
SCIENCE			50
PHYS		5	550
ECON		1	250
MSE			300
IE			400

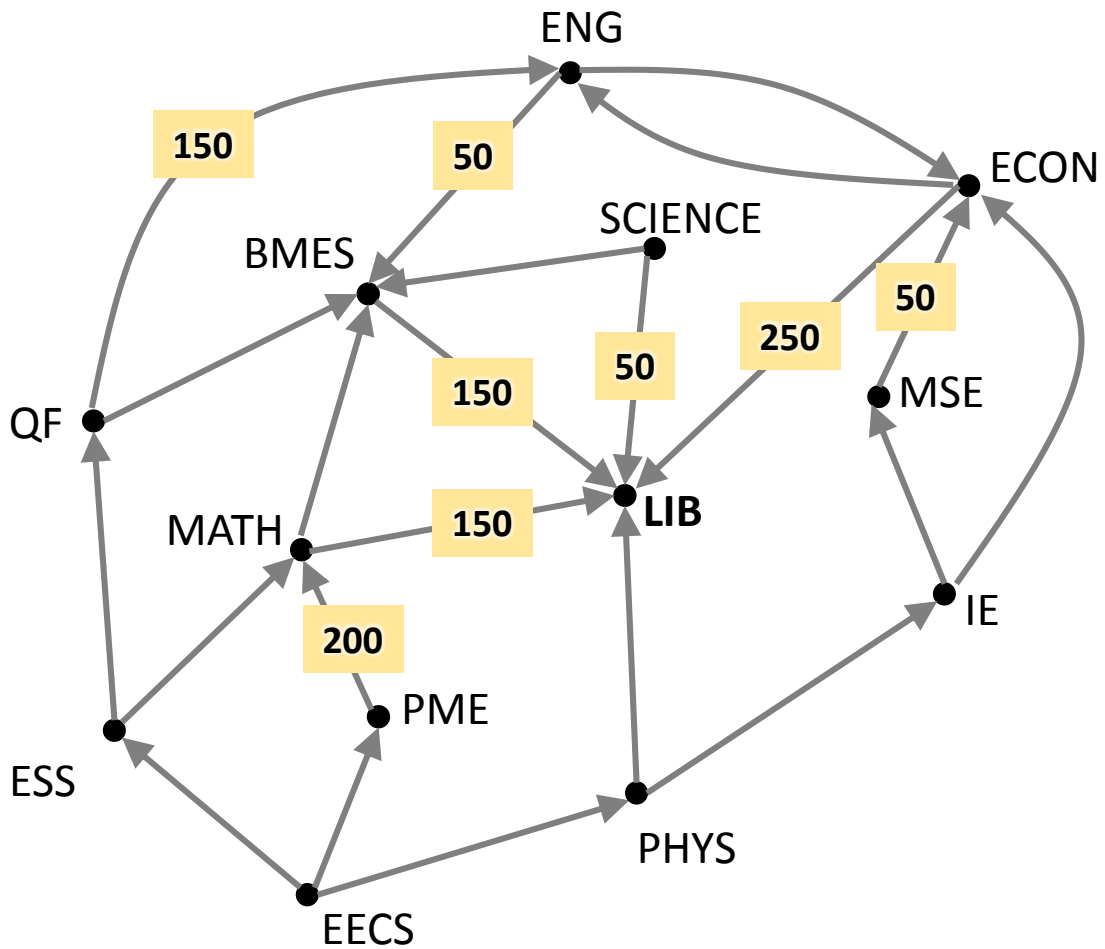


Source	Dest.	Min-latency path	
		Num. of edges	Latency
ENG	LIB		200
QF		3	350
ESS		2	400
EECS		2	700
BMES			150
MATH			150
PME			350
SCIENCE			50
PHYS		5	550
ECON		1	250
MSE			300
IE			400

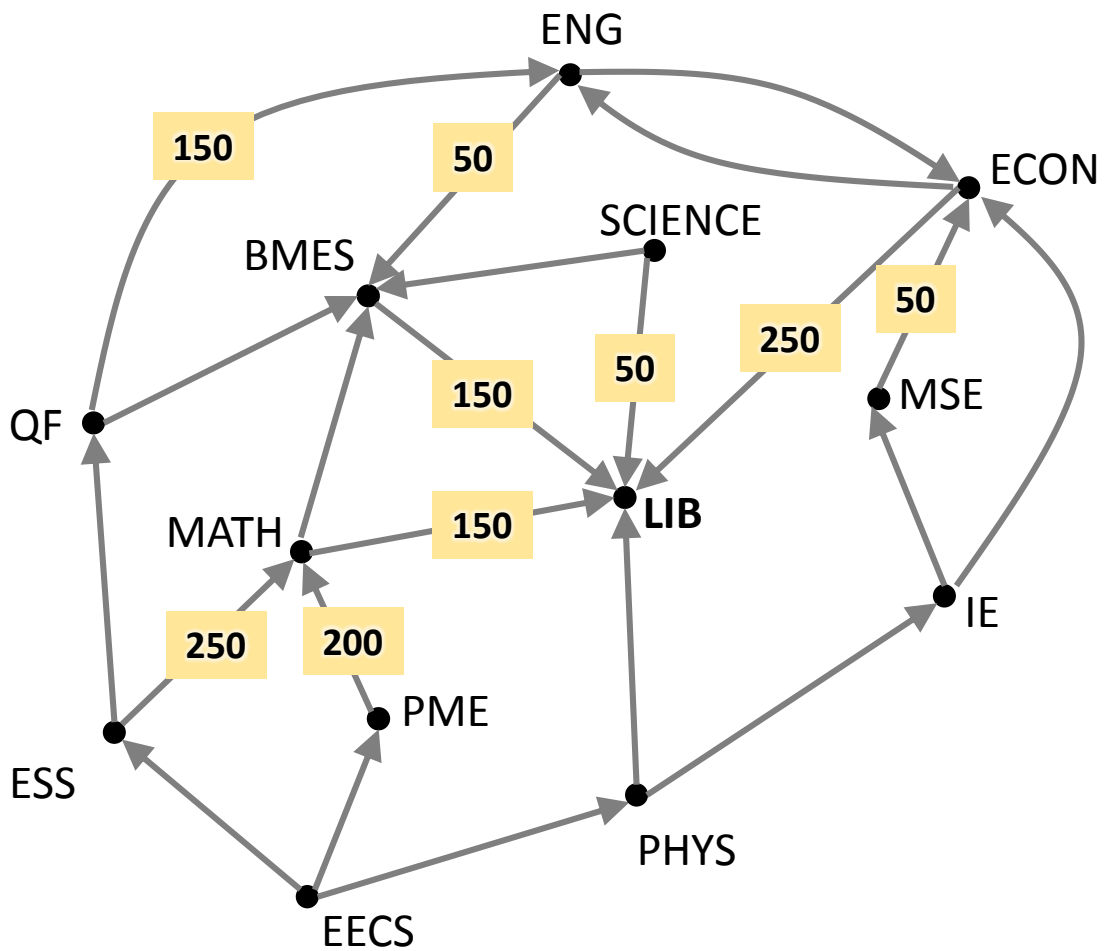




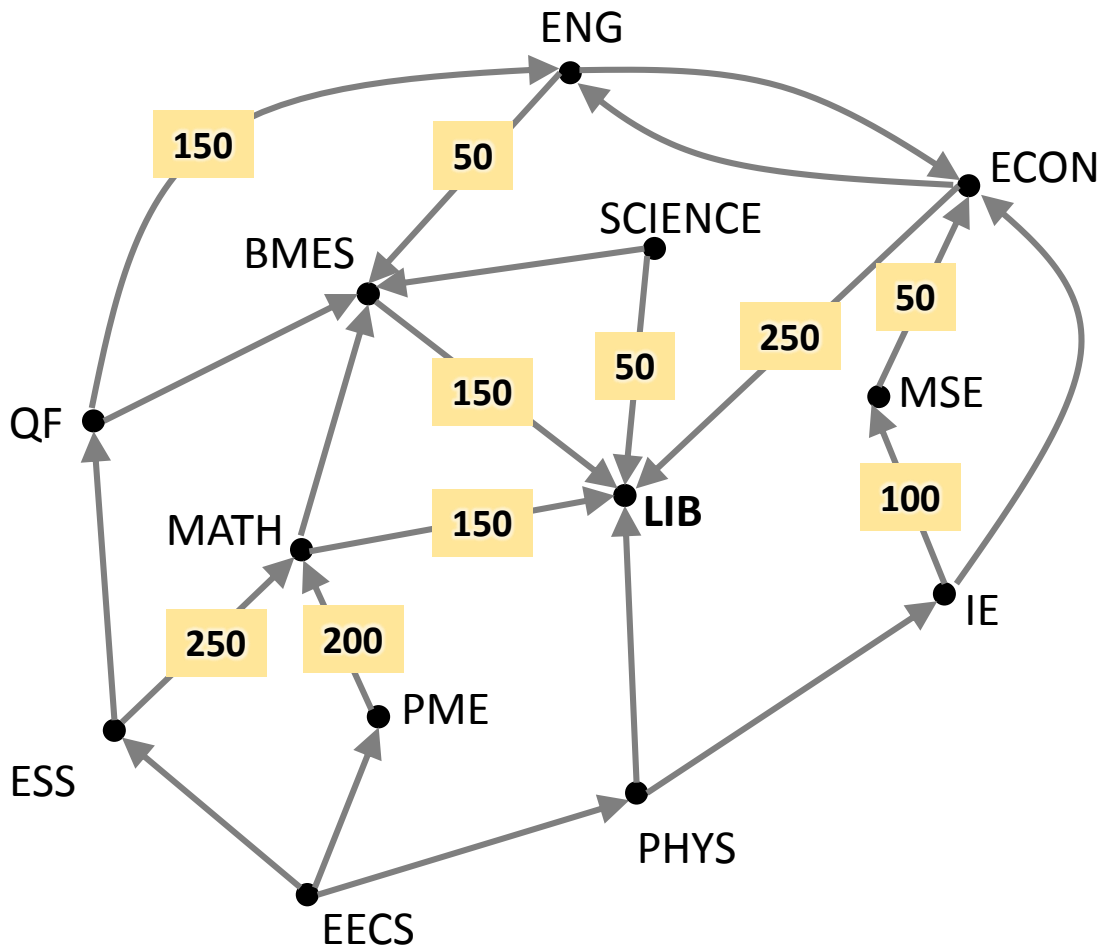
Source	Dest.	Min-latency path	
		Num. of edges	Latency
ENG	LIB		200
QF		3	350
ESS		2	400
EECS		2	700
BMES			150
MATH			150
PME			350
SCIENCE			50
PHYS		5	550
ECON		1	250
MSE			300
IE			400



Source	Dest.	Min-latency path	
		Num. of edges	Latency
ENG	LIB		200
QF		3	350
ESS		2	400
EECS		2	700
BMES			150
MATH			150
PME			350
SCIENCE			50
PHYS		5	550
ECON		1	250
MSE			300
IE			400

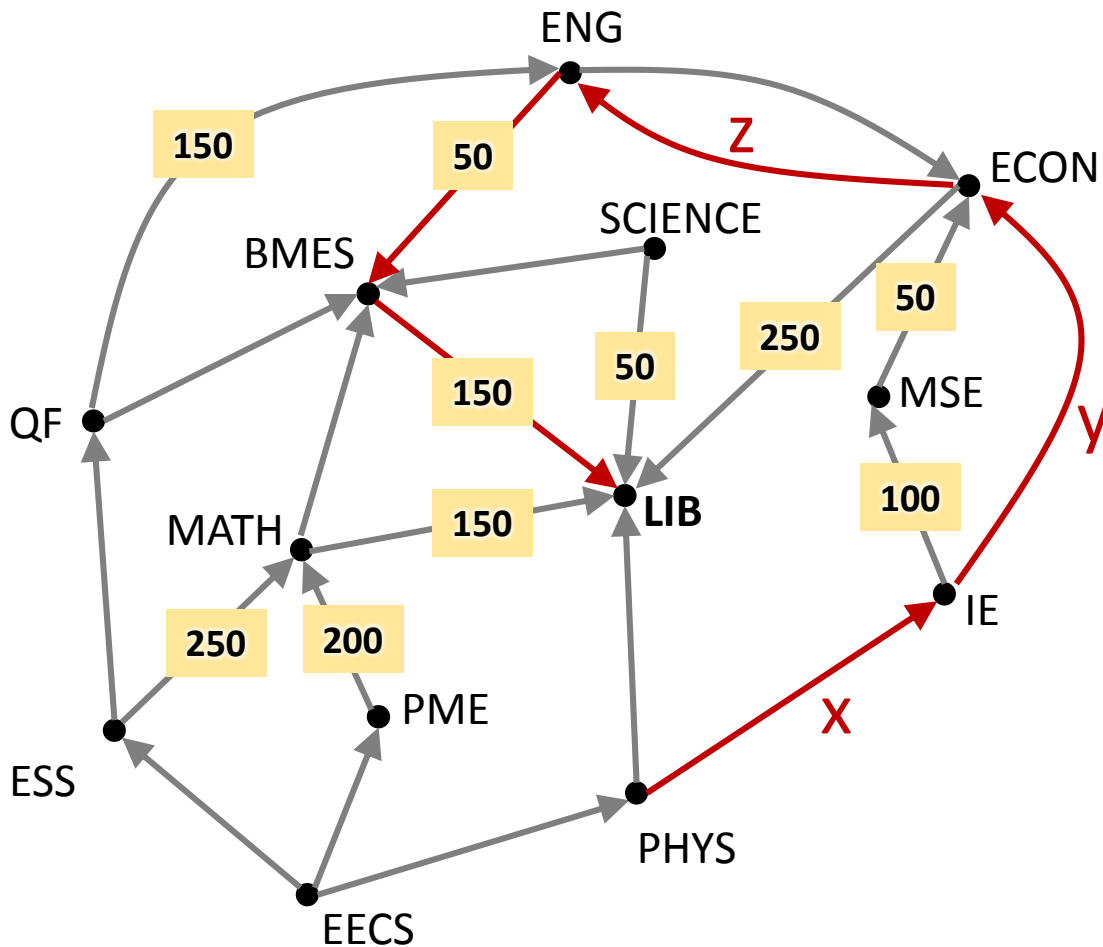


Source	Dest.	Min-latency path	
		Num. of edges	Latency
ENG	LIB		200
QF		3	350
ESS		2	400
EECS		2	700
BMES			150
MATH			150
PME			350
SCIENCE			50
PHYS		5	550
ECON		1	250
MSE			300
IE			400



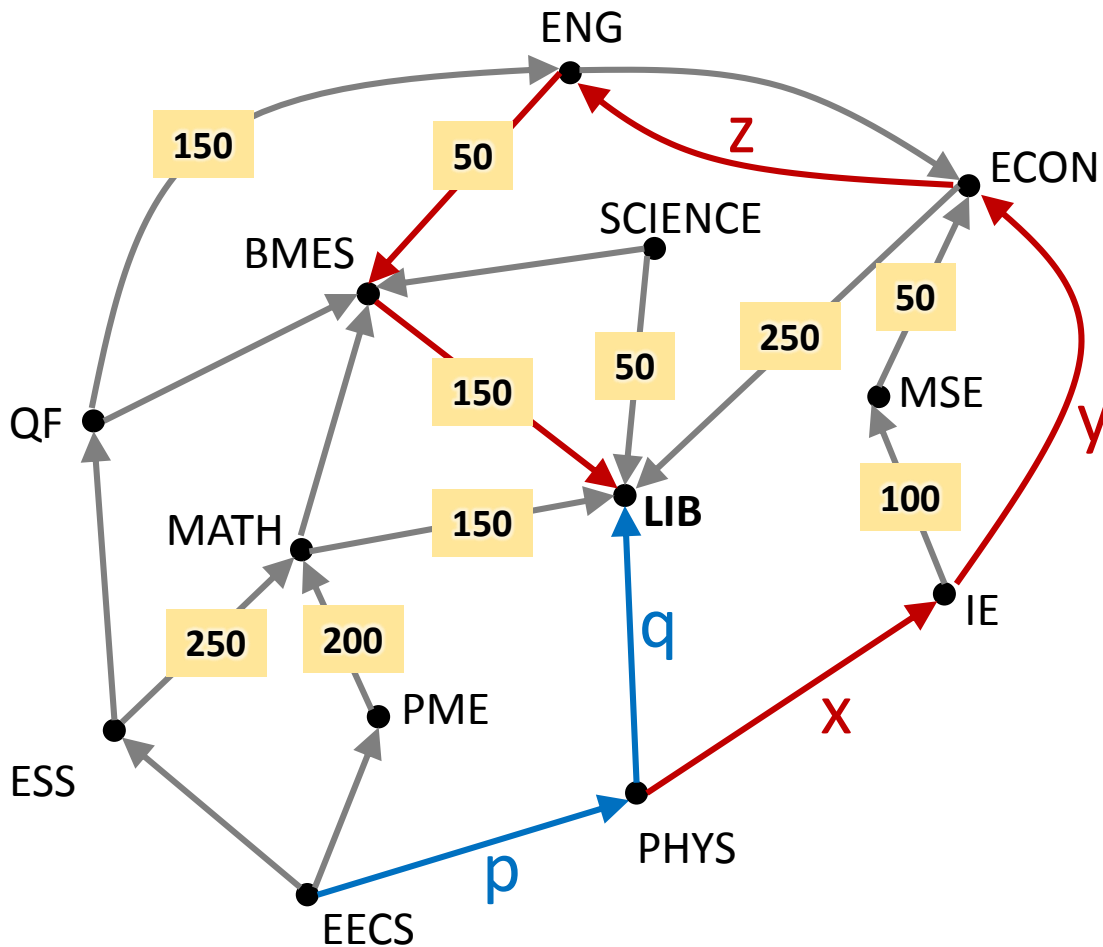
Source	Dest.	Min-latency path	
		Num. of edges	Latency
ENG	LIB		200
QF		3	350
ESS		2	400
EECS		2	700
BMES			150
MATH			150
PME			350
SCIENCE			50
PHYS		5	550
ECON		1	250
MSE			300
IE			400

- PHYS' and IE's shortest path information,  $\rightarrow x$  must be  $550 - 400 = 150$
- IE's and ECON's shortest path information,  $\rightarrow y$  must be  $400 - 250 = 150$
- ECON's and ENG's shortest path information,  $\rightarrow z$  must be  $250 - 200 = 50$



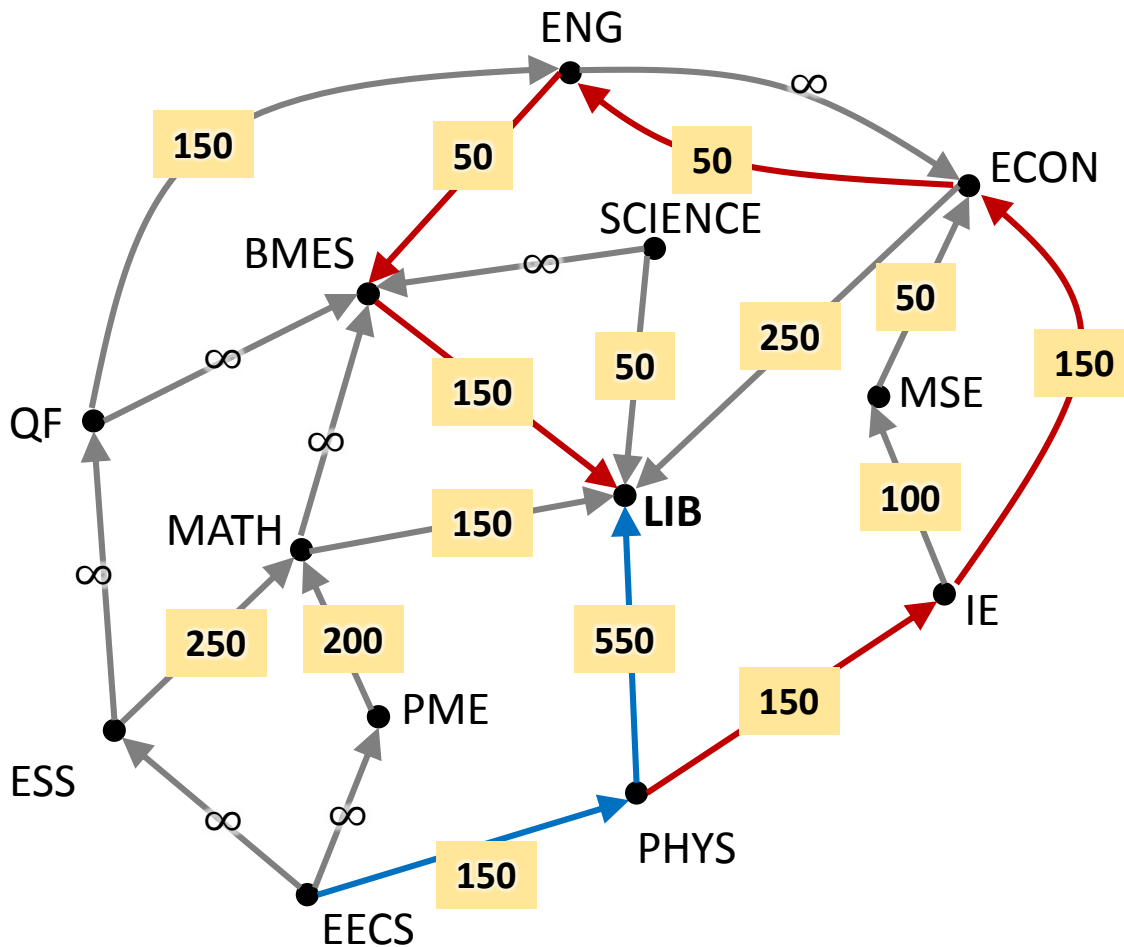
Source	Dest.	Min-latency path	
		Num. of edges	Latency
ENG	LIB		200
QF		3	350
ESS		2	400
EECS		2	700
BMES			150
MATH			150
PME			350
SCIENCE			50
PHYS		5	550
ECON		1	250
MSE			300
IE			400

- PHYS' and IE's shortest path information,  $\rightarrow x$  must be  $550 - 400 = 150$
- IE's and ECON's shortest path information,  $\rightarrow y$  must be  $400 - 250 = 150$
- ECON's and ENG's shortest path information,  $\rightarrow z$  must be  $250 - 200 = 50$
- EECS's and PHYS' shortest path information,  $\rightarrow p$  must be 150, and  $q$  must be 550



Source	Dest.	Min-latency path	
		Num. of edges	Latency
ENG	LIB		200
QF		3	350
ESS		2	400
EECS		2	700
BMES			150
MATH			150
PME			350
SCIENCE			50
PHYS		5	550
ECON		1	250
MSE			300
IE			400

One valid solution:



Source	Dest.	Min-latency path	
		Num. of edges	Latency
ENG	LIB		200
QF		3	350
ESS		2	400
EECS		2	700
BMES			150
MATH			150
PME			350
SCIENCE			50
PHYS		5	550
ECON		1	250
MSE			300
IE			400