Runtime Analysis

Code	Line Cost	Times Executed	Total Cost	Big O
Vector: LoadCourses	1	N	N	O(n)
Vector: SearchCourses	1	N	N	O(n)
Vector: PrintCourseList	N log n + n	N log n + n	O(n log n)	
HashTable: LoadCourses	1	N	N	O(n)
HashTable: SearchCourses	1	1	1	O(1)
HashTable: PrintCourseList	N log n + n	N log n + n	O(n log n)	
BST: LoadCourses	Log n	N	N log n	O(n log n)
BST: SearchCourses	Log n	1	Log n	O(log n)
BST: PrintCourseList	1	N	N	O(n)

The advantages of a vector would be that is fairly simple to implement, it keeps the order of insertion, and is good for small datasets. The disadvantage of vectors is that searching requires linear time, and sorting is required. The advantage of a hash table is that it has fast search time and insertion. The disadvantage id that it is not an extremely ordered option. Advantages of the Binary Search Tree is that it is very easy to order, insertion, search and traversal are very straightforward processes.

I think a binary search tree would be a good choice for the program. It allows for very efficient insertion of information, and makes searching for courses easy, and maintains keeping all of the information in order. The advisors need an efficient way to look up and view the information sorted, and a binary search tree doesn’t need the extra steps that vector requires that it needs to re-sorted every time new course information is added.