豊田工業高等専門学校	開講年度	令和02年度 (2020年度)	授業科目	知識工学

科目基礎情報

科目番号	93026	科目区分	専門 / 選択
授業形態	講義	単位の種別と単位数	学修単位: 2
開設学科	電子機械工学専攻E	対象学年	専2
開設期	後期	週時間数	2
教科書/教材	「BIG DATA」by Viktor Mayer-Scho:nberger & Kenneth Cukier (John Murray) ISBN978-1473647206		
担当教員	西澤 一		

到達目標

(ア) Students can explain the concept of big data
(イ) Students can describe three characteristic features of big data
(ウ) Students recognize the risks of data-driven decision makings
(エ) Students can distinguish correlational analysis from causational analysis
(オ) Students can explain a few effective examples of big data

ルーブリック

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目(ア)	Students can explain the concept of big data.	Students understand the concept of big data.	Students don't understand the concept of big data.
評価項目(イ)	Students can describe three characteristic features of big data.	Students understand three characteristic features of big data.	Students don't understand three characteristic features of big data.
評価項目(ウ)	Students can explain the risks of data-driven decision makings.	Students recognize the risks of data-driven decision makings.	Students don't recognize the risks of data-driven decision makings.

学科の到達目標項目との関係

学習・教育到達度目標 A4　コンピュータを利用した情報の保持・変換・伝達のための概念を理解し，説明できる.
JABEE d　当該分野において必要とされる専門的知識とそれらを応用する能力
本校教育目標 ① ものづくり能力

教育方法等

概要	As engineers working in the century of knowledge, we should understand how some knowledge is created from daily dataflow from the society, and may be used in important decision makings. Big data is a recent and not well-defined concept but a naming of a series of processing ideas and methods handling such huge dataflow. It is different from well-established processing methods in the last century, depends on the huge processing power on recent computers, and has large benefits along with serious risks to our society. This lecture intends to summarize the basis of big data for young engineering students. The lecture is based on the lecturer's experience worked as developing engineer to learn the recent trend of analytics and information technology.
授業の進め方・方法	(self-study & preparation) The students are required to read the assigned pages of the text before every lesson, write short summaries and present them to the class.
注意点	The students are expected to have receptive English skills of TOEIC 500 or higher, because all the lectures, discussions, assignments, and tests are to be done in English.

選択必修の種別・旧カリ科目名

授業計画

		週	授業内容	週ごとの到達目標
後期	3rdQ	1週	Two examples of showing social effect from big data (self-study & preparation) write summary of three shifts of information analysis caused by big data	recognize the social effect from big data
		2週	The outline of three shifts of information analysis caused by big data (self-study & preparation) write summary of processing ALL data	understand the three shifts of information analysis
		3週	Processing ALL data instead of some samples (self-study & preparation) write summary of handling messy data	understand the difference of using ALL data instead of sampled data
		4週	Handling messy data (self-study & preparation) write summary of causality vs. correlation (part 1)	grasp the meaning of "messy" data
		5週	Leaving causality to satisfying with correlations (self-study & preparation) write summary of causality vs. correlation (part 2)	distinguish correlation from causality
		6週	Leaving causality to satisfying with correlations (self-study & preparation) write summary of turning data into valuable information	distinguish correlation from causality
		7週	Datafication: turning data into valuable information (self-study & preparation) write summary of Datafication	grasp the meaning of "Datafication"
		8週	Datafication: turning data into valuable information (self-study & preparation) write summary of non-rivalrous option value of data (part 1)	grasp the meaning of "Datafication"
	4thQ	9週	Value: non-rivalrous option value of data (self-study & preparation) write summary of non-rivalrous option value of data (part 2)	understand the option value of data

		10週	Value: non-rivalrous option value of data (self-study & preparation) write summary of value chain (part 1)	understand the option value of data
		11週	Implications: data, skills, and ideas for the value chain (self-study & preparation) write summary of value chain (part 2)	know the value chain of data analysis
		12週	Implications: data, skills, and ideas for the value chain (self-study & preparation) write summary of risks related to big data	know the value chain of data analysis
		13週	Risks : privacy, punishment based on the probability, dictatorship of data (self-study & preparation) write summary of controlling data	understand the risk of big data
		14週	Control: from privacy to accountability, the algorithmist (self-study & preparation) write summary of next issues of big data	know some ideas of controlling data analysis
		15週	Next: when data speaks, the bigger data	know the possible future of data analysis
		16週		

モデルコアカリキュラムの学習内容と到達目標

分類	分野	学習内容	学習内容の到達目標	到達レベル	授業週

評価割合

	定期試験	課題	合計
総合評価割合	40	60	100
専門的能力	40	60	100