Outcomes-Based Education (OBE) Course Design/Syllabus in CIS 215 IS Innovations and New Technologies

Date Revised/Enhanced: July 21, 2021

Course Description: CMO #25 Series 2015

This course explores the use of technologies as an essential component in addressing business problems and capturing business opportunities. By examining new and promising information technologies, Information Systems students are given the opportunity to develop a deeper, better understanding of technologies (and science behind them), how they work, what they can and what they cannot do. Understanding the nature of the technology, including the costs/benefits and externalities, will also put the student in a position to critique and even develop business strategy and crafting competitive advantage proposals that would have the intent of leveraging technologies for maximizing profit, reducing costs, enhancing product and service delivery, and improving customer satisfaction. In this course students will evaluate the impact and consequences of technology in the financial, managerial, and organizational aspects of the corporate environment. CMO No. 25, Series 2015

Course Outcome:

At the end of the semester, you are expected to:

1: Explained the role of state-of-the-art digital technology on changing society

2: Explained and evaluated emerging technologies, such as advanced broadband, nanotechnology, visualization, internet of things, mobile communications, data mining, analytics, social media, robotics, wearables, and online education

3: Explained and appraised the importance of ethical and socio-cultural impacts and geographical inequalities of the digital revolution

Course Design Matrix:

DESIRED LEARNING OUTCOMES (DLO)	COURSE CONTENT/ SUBJECT MATTER	TEXTBOOKS/ REFERENCES	OUTCOMES-BASED TEACHING & LEARNING (OBTL)		ASSESSMENT OF LEARNING OUTCOMES (ALO)		RESOURCE MATERIAL	TIME TABLE
			Face to Face	Remote	Face to Face	Remote		
At end of the unit, the students must have: 1. Internalized and demonstrated the vision, mission, core values of the University and the institutional,	**Unit 0: *Vision, Mission, Core Values, and Outcomes*** 1. The University's Vision, Mission, Core Values, and Outcomes 2. The College of Information and	2013 University Code 2011 WVSU Student Handbook Bulletin of Information	Class Discussion Video Presentation	Video Presentation			Video IDs, Activity Sheets	1 week

college/campus, degree and course outcomes	Communications Technology Outcomes 3. The BS in Information Technology Degree Outcomes 4. The Course/ Subject Outcomes 5. Course Policies (expectations, outputs, deadlines, rubrics, consultation hours, etc). This is appended to the syllabus.							
At the end of the unit, the student must have: 1. Understood the concept of digital transformation 2. Explained the correlation between technology and innovation 3. Understood the role and impact of digital transformation in the organizations 4. Explained the key role of a Chief Inspector Officer in managing digital transformation integration in a company	**Unit 1: Digital Transformation** 1. What is Digital Transformation? 2. Technology and Innovation 3. Role and Impact to Organizations 4. Role of Chief Inspector Officer	Palgrave, Macmillan, 2019, Digital Business Models: Driving Transformation and Innovation, 1st Edition, Springer Schallmo, Williams, 2018, Digital Transformation		Online Lecture-Discussion Multimedia Presentation Modules Online Consultations		Online Discussion/ Polls Reflection Paper Case Analysis	Laptop/ Computer/Tablets for students Learning Resource Mgt (Google Classroom) Hand-outs PowerPoint Presentation Research Articles	1 week

		Now!, 1st Edition, Springer Ustundag, Cevikcan, 2018, Industry 4.0: Managing The Digital Transformation, Springer		Independent Learning Resource Links Readings Case Study			Activity Sheets	
At the end of the unit, the student must have: 1. Understood the concept of automation and robotics 2. Identified the current state of automation and robotics 3. Perceived the pros and cons in using automation and robotics 4. Generalized the impact of integrating automation and robotics in the industry	**Unit 2: Automation and Robotics** 1. What is Automation and Robotics? 2. Current state of Automation and Robotics 3. Pros and Cons of Automation and Robotics 4. The impact of Automation and Robotics in business industry	Kudila, Ben-Tzvi, 2020, Dynamics and Control of Robotic Systems, 1st Edition, Wiley West, D.M, 2018, The Future of Work: Robots, AI, and Automation, 1st Edition, Brookings Institution Press Gupta, Arora, Westcott, 2016,		Video Lecture Online Lecture-Discussion Multimedia Presentation Modules Online Consultations		Online Discussion/ Polls Group Work Journal Article Review Case Analysis	Laptop/ Computer/Tablets for students Learning Resource Mgt (Google Classroom) Hand-outs PowerPoint Presentation Research Articles Activity Sheets	2 weeks

		Industrial Automation and Robotics: An Introduction, 1st Mercury Learning and Information Mullakara, Asokan, 2020, Robotic Process Automation Projects: Build real-world RPA solutions using UiPath and Automation Anywhere, 1st Edition, Packt Publishing		Independent Learning Resource Links Readings Case Study				
At the end of the unit, the student must have: 1. Identified the current state of artificial intelligence	**Unit 3: Artificial Intelligence** 1. What is Artificial Intelligence?	Porter, Heppelmann, 2019, On AI, Analytics, and the New Machine		Online Lecture-Discussion		Online Discussion	Laptop/ Computer/Tablets for students Learning Resource Mgt	3 weeks

2. Explained the concept of artificial intelligence 3. Perceived the pros and cons of artificial intelligence 4. Comprehend the usage of some software and tools that used artificial intelligence 5. Practiced and learned artificial intelligence simulation	2. Current state of Artificial Intelligence 3. Pros and Cons of Artificial Intelligence 4. Artificial Intelligence software, tools and online simulation	Age, 1st Edition, Harvard Business Review Press Brockman, 2019, Possible Minds: 25 Ways of looking at AI, 1st Edition, Penguin Press Canals, Heukamp, 2020, The Future of Management in an AI world: Redefining Purpose and Strategy in the Fourth Industrial Revolution, 1st Edition, Palgrave Macmillan Gentsch, 2018, AI Marketing, Sales and Service: How Marketers without		Multimedia Presentation Modules Online Consultations Independent Learning Resource Links Readings Case Study		Small group discussion Workshop Activities Group Work Online Survey Initial Idea Presentation	(Google Classroom) Google Meet/Zoom Hand-outs Powerpoint Presentation Research Articles Activity Sheets Rubrics	

		a Data Science Degree can use AI, Big Data and Bots, 1st Edition, Palgrave Macmillan						
At the end of the unit, the student must have: 1. Explained the concept of spatial big data 2. Enumerated the characteristics of big data 3. Discussed the current state of spatial big data 4. Evaluated the pros and cons of spatial big data	**Unit 4: Spatial Big Data** 1. What is Spatial Big Data? 2. Characteristics of Big Data 3. Current state of Spatial Big Data 4. Pros and Cons of Spatial Big Data	Yamagata, 2019, Spatial Analysis Using Big Data: Methods and Urban Applications, 1st Edition, Academia Press Ivan, Singelton, Horak, Inspektor, 2017, The Rise of Big Spatial Data, 1st Edition, Springer		Online Lecture-Discussion Multimedia Presentation Modules Online Consultations Independent Learning		Online Discussion Small group discussion Workshop Activities MVP/Mock-up Presentation	Laptop/ Computer/Tablets for students Learning Resource Mgt (Google Classroom) Google Meet/Zoom Hand-outs Powerpoint Presentation	2 weeks

		Bahga, Madisetti, 2019, Big Data Analytics: A Hands-On Approach, 1st Edition, Arshdeep Bahga and Vijay Madisetti Patnaik, 2020, New Paradigm Of Industry 4.0: Internet Of Things, Big Data And Cyber Physical Systems, 1st Edition, Springer		Resource Links Readings Case Study			Research Articles Activity Sheets Rubrics	
At the end of the unit, the student must have: 1. Explained the meaning of Internet of Things 2. Understood current state of Internet of Things	**Unit 5: Internet of Things** 1. What is Internet of Things? 2. Current State of Internet of Things 3. Impact of Internet of Things to the industry	Serpanos, Wolf, 2018, Internet-of-Things (IoT) Systems: Architectures, Algorithms, Methodologies, 1st Edition, Springer		Online Lecture-Discussion Multimedia Presentation		Online Discussion/ Polls	Laptop/ Computer/Tablets for students Learning Resource Mgt (Google Classroom)	1 week

3. Explained the importance of Internet of Things toward the industry 4. Evaluated the pros and cons of Internet of Things	4. Pros and Cons of Internet of Things	Anuradha, Tripathy, 2018, Internet of Things (IoT): Technologies, Applications, Challenges and Solutions, 1st Edition, CRC, Press; Taylor and Francis Gilchrist, 2016, Industry 4.0: The Industrial Internet of Things, 1st Edition, Apress		Modules Online Consultations Independent Learning Resource Links Readings Case Study		Cases Analysis	Hand-outs Powerpoint Presentation Research Articles Activity Sheets	

		Cirani, Ferrari, Picone, Veltri, 2018, Internet of Things: Architectures, Protocols and Standards, Wiley						
At the end of the unit, the student must have: 1. Explained thoroughly the difference between augmented reality and virtual reality 2. Defined augmented reality and virtual reality 3. Discussed the current state of augmented reality and virtual reality 4. Evaluated the pros and cons of augmented reality and virtual reality	**Unit 6: Augmented Reality and Virtual Reality** 1. What is Augmented Reality and Virtual Reality? 2. Usage of Augmented Reality and Virtual Reality 3. Current State of Augmented Reality and Virtual Reality 4. Pros and Cons of Augmented Reality and Virtual Reality	Pangilinan, Lukas, Mohan, 2019, Creating Augmented and Virtual Realities: Theory and Practice for Next-Generation Spatial Computing, 1st Edition, O'Reilly Media Arnaldi, Guitton, Moreau,2018, Virtual Reality and Augmented Reality: Myths		Online Lecture-Discussion Multimedia Presentation Modules Online Consultations Independent Learning Resource Links		Online Discussion/ Polls Cases Analysis	Laptop/ Computer/Tablets for students Learning Resource Mgt (Google Classroom) Hand-outs Powerpoint Presentation Research Articles Activity Sheets	1 week

		and Realities, 1st Edition, Wiley-ISTE Le, Van, Nhuong, Gia, Tromp, G, 2018, Emerging Technologies for Health and Medicine: Virtual Reality, Augmented Reality, Artificial Intelligence, Internet of Things, Robotics, Industry 4.0, 1st Edition, John Wiley & Sons ; Salem Dieck, Jung, 2019, Augmented		Readings Case Study				

		Reality and Virtual Reality: The Power of AR and VR for Business, 1st Edition, Springer						
At the end of the unit, the student must have: 1. Defined Self-Driving Cars 2. Discussed the current state of Self-Driving Cars 3. Explained the importance of Self-Driving Cars to the industry 4. Evaluated the pros and cons of Self-Driving Cars	**Unit 7: Self-Driving Cars** 1. What is Self-Driving Car? 2. Current state of Self-Driving Cars 3. Impact of Self-Driving Cars to the society 4. Pros and Cons of Self-Driving Cars	Neff, 2018, The Laser that's Changing the World: The Amazing Stories behind Lidar, from 3D Mapping to Self-Driving Cars, 1st Edition, Prometheus Books Eliot, 2020, AI Self-Driving Cars Divulgement: Practical Advances in Artificial Intelligence and Machine Learning, 1st		Online Lecture-Discussion Multimedia Presentation Modules Online Consultations Independent Learning Resource Links Readings		Online Discussion/ Polls Cases Analysis	Laptop/ Computer/Tablets for students Learning Resource Mgt (Google Classroom) Hand-outs Powerpoint Presentation Research Articles Activity Sheets	1 week

		Edition, LBE Press Publishing		Case Study				
At the end of the examination, the students must have achieved 75% from the Midterm Examination	**Topics from Unit 1 to Unit 7**	References from Unit 1 to unit 7	Conduct of Midterm Examination	Conduct of Online Assessment	Test paper	Case Analysis	Midterm Exam Online Assessment Case Analysis Laptop/Computer	2 hrs
At the end of the unit, the student must have: 1. Defined Drones 2. Discussed the current state of Drones 3. Explained the importance of Drones in the industry 4. Evaluated the pros and cons of Drones	**Unit 8: Drones (Unmanned Aerial Vehicles)** 1. What is a Drone? 2. Current state of Drones. 3. Usage and impact of Drones in the industry 4. Pros and Cons of Drones	White, 2018, The Drones Book, 1st Edition, Imagine Publishing Ltd Saad, Bennis, Mozaffari, Lin, 2020, Wireless Communications and Networking for Unmanned Aerial Vehicles, 1st		Online Lecture-Discussion Multimedia Presentation Modules		Online Discussion/ Polls Cases Analysis	Laptop/ Computer/Tablets for students Learning Resource Mgt (Google Classroom) Hand-outs Powerpoint Presentation	1 week

		Edition, Cambridge University Press Um, 2019, Drones as Cyber-Physical Systems: Concepts and Applications for the Fourth Industrial Revolution, 1st Edition, Springer Galar, Kumar, Seneviratne, 2020, Robots, Drones, UAVs and UGVs for Operation and Maintenance, 1st Edition, CRC Press LLC		Online Consultations Independent Learning Resource Links Readings Case Study			Research Articles Activity Sheets	

At the end of the unit, the student must have: 1. Defined Sharing Economy 2. Discussed the current state of Sharing Economy 3. Explained the impact of Sharing Economy to the industry 4. Evaluated the pros and cons of Sharing Economy	**Unit 9: Sharing Economy** 1. What is Sharing Economy? 2. Current state of Sharing Economy 3. Impact of Sharing Economy to the industry 4. Pros and Cons of Sharing Economy	Corrales, Compagnucci, Forgo, Kono, Teramoto, Vermeulen, 2020, Legal Tech and the New Sharing Economy, 1st Edition, Springer Saito, 2020, Sharing Ecosystem Services: Building More Sustainable and Resilient Society, 1st Edition, Springer		Online Lecture-Discussion Multimedia Presentation Modules Online Consultations Independent Learning Resource Links Readings Case Study		Online Discussion/ Polls Readings Group Work	Laptop/ Computer/Tablets for students Learning Resource Mgt (Google Classroom) Hand-outs Powerpoint Presentation Activity Sheets	1 week

		Albinsson, Perera, 2018, The Rise of the Sharing Economy: Exploring the challenges and opportunities of collaborative consumption, 1st Edition, Praeger Crisostomi, Ghaddar, Hausler, Sawaya, Russo, 2020, Analytics for the Sharing Economy: Mathematics, Engineering and Business PErspective, 1st Edition, Springer						

At the end of the unit, the student must have: 1. Defined Blockchain 2. Discussed the current state of Blockchain 3. Explained the impact of Blockchain to the industry 4. Pros and Cons of Blockchain	**Unit 10: Blockchain** 1. What is Blockchain? 2. Current state of Blockchain 3. Impact of Blockchain to the industry 4. Pros and Cons of Blockchain	Righi, Alberti, Singh, 2020, Blockchain Technology For Industry 4.0: Secure, Decentralized, Distributed and Trusted Industry Environment, 1st Edition, Springer Laurence, 2020, Blockchain for Dummies, 1st Edition, Wiley Hacioglu, 2020, Digital Business Strategies in Blockchain Ecosystems: Transformational Design and Future of Global Business, 1st Edition, Springer		Online Lecture-Discussion Multimedia Presentation Modules Online Consultations Independent Learning Resource Links Readings Case Study		Online Discussion/ Polls Readings Reflection Paper	Laptop/ Computer/Tablets for students Learning Resource Mgt (Google Classroom) Hand-outs Powerpoint Presentation Research Articles Activity Sheets	1 week

		Quest, 2018, Cryptocurrency Master: Everything you need to know about Cryptocurrency and Bitcoin Trading, Mining, Investing, Ethereum, ICOs, and the Blockchain, 1st Edition, CreateSpace Independent Publishing Platform						

At the end of the unit, the student must have: 1. Defined Wearables 2. Discussed the current state of Wearables 3. Explained the impact of Wearables to the industry 4. Pros and Cons of Wearables	**Unit 11. Wearables** 1. What is Wearables? 2. Current state of Wearables 3. Impact of Wearables to the industry 4. Pros and Cons of Wearables	Pedersen, Iliadis, 2020, Embodied Computing: Wearables, Implantables, Embeddables, Ingestibles, 1st Edition, The MIT Press Ferguson, Walker, Rosen, Jacob, 2020, Wearables Robotics: Systems and Applications, 1st Edition, Academic Press		Online Lecture-Discussion Multimedia Presentation Modules Online Consultations Independent Learning Resource Links Readings Case Study		Workshop Activities Group Work Group Presentation	Laptop/ Computer/Tablets for students Learning Resource Mgt (Google Classroom) Google Meet/ Zoom Powerpoint Presentation Activity Sheets Rubrics	2 weeks

		Yilmaz, Nazire D, 2019, Smart Textiles: Wearable Nanotechnology, 1st Edition, Wiley Fortino, Gravina, Galzarano, 2018, Wearable Computing: From Modeling to Implementation of Wearable Systems based on Body Sensor Networks, 1st Edition, Wiley-IEEE Press						

At the end of the unit, the student must have: 1. Defined Analytics and Social Media 2. Discussed the current state of Analytics and Social Media 3. Explained the impact of Analytics and Social Media to the industry 4. Pros and Cons of Analytics and Social Media	**Unit 12. Analytics and Social Media** 1. What is Analytics and Social Media? 2. Current state of Analytics and Social Media 3. Impact of Analytics and Social Media to the industry 4. Pros and Cons of Analytics and Social Media	Meiselwitz, 2018, Social Computing and Social Media. Technologies and Analytics, 1st Edition, Springer International Publishing Szabo, Polatkan, Boykin, Chalkiopoulos, 2018, Social Media Data Mining and Analytics, 1st Edition, Wiley Chatterjee, Krystyanczuk, 2017, Python Social Media Analytics: Analyze and Visualize data from Twitter, YouTube, GitHub, and more, 1st		Online Lecture-Discussion Multimedia Presentation Modules Online Consultations Independent Learning Resource Links Readings Case Study		Workshop Activities Group Work Group Presentation	Laptop/ Computer/Tablets for students Learning Resource Mgt (Google Classroom) Google Meet/ Zoom Powerpoint Presentation Activity Sheets Rubrics	2 weeks

		Edition, Packt Publishing						
At the end of the unit, the student must have: 1. Defined Cloud and Mobile Environments 2. Discussed the current state of Cloud and Mobile Environments 3. Explained the impact of Cloud and Mobile Environments to the industry 4. Pros and Cons of Cloud and Mobile Environments	**Unit 13. Emerging Cloud and Mobile Environments** 1. What is Cloud and Mobile Environments? 2. Current state of Cloud and Mobile Environments 3. Impact of Cloud and Mobile Environments to the industry 4. Pros and Cons of Cloud and Mobile Environments	Kumar, Vidhyalakshmi, 2018, Realibility Aspect of Cloud Computing Environment, 1st Edition, Springer Singapore Kale, 2018, Creating Smart Enterprises: Leveraging Cloud, Big Data, Web, Social Media, Mobile and IoT Technologies, 1st Edition, Auerbach Publications; CRC Press		Online Lecture-Discussion Multimedia Presentation Modules Online Consultations Independent Learning Resource Links Readings Case Study		Workshop Activities Group Work Group Presentation	Laptop/ Computer/Tablets for students Learning Resource Mgt (Google Classroom) Google Meet/ Zoom Powerpoint Presentation Activity Sheets Rubrics	2 weeks

		Koul, Ganju, Kasam, 2019, Practical Deep Learning for Cloud, Mobile, and Edge: Real-World AI and Computer-Vision Projects using, 1st Edition, Springer NG, 2018, Machine Learning Projects for Mobile Applications, 1st Edition, Packt Publishing						

At the end of the unit, the student must have: 1. Described the Data-Information-Knowledge-Wisdom (DIKW) Model 2. Discussed the relationship between DIKW and ICT 3. Described the Balance Scorecard and its Framework 4. Developed an innovation project	**Unit 14. Alignment of Business Strategy and Innovation Strategy** 1. What is Data-Information-Knowledge-Wisdom (DIKW) Model? 2. What is Balanced Scorecard 3. Balanced Scorecard Framework 4. Application of Business Strategy and Innovation Strategy	Queensenberry, 2018, Social Media Strategy: Marketing, Advertisiing, and Public Relations in the Consumer Revolution, 1st Edition, Rowman and Littlefield Publishers Birudavolu, Nag, 2019, Business Innovations and ICT Stagtegies, 1st Edition, Springer Piijl, Lokitz, Solomon, Pluijm, Lieshout, 2016, Design a Better Business: New Tools, Skills, and Mindset for Strategy and		Online Lecture-Discussion Multimedia Presentation Modules Online Consultations Independent Learning Resource Links Readings Case Study		Workshop Activities Group Work Group Presentation	Laptop/ Computer/Tablets for students Learning Resource Mgt (Google Classroom) Google Meet/ Zoom Powerpoint Presentation Activity Sheets Rubrics	2 weeks

		Innovation, 1st Edition, Wiley Kingsnorth, 2016, Digital Marketing Strategy: An Integrated Approach to Online Marketing, 1st Edition, Kogan Page						
At the end of the examination, the students must have achieved 75% from the Final Examination	**Topics from Unit 8 to Unit 14**	References from Unit 8 to unit 14	Conduct of Midterm Examination	Conduct of Online Assessment	Test paper	Case Analysis	Midterm Exam Online Assessment Case Analysis Laptop/Computer	2 hrs

Criteria for Grading

I. LECTURE (100%)	
Components	Percentage
Major Exam **(Alternative Assessments: Presentation/Business Plan) (Midterm/Final)**	40%
Quizzes/Long Test /Unit Tests **(Alternative Assessment: Activities/Reflection Papers/Case Studies)**	30%
Supplementary Outputs	10%
Class Participation	20%
Total	100%

Midterm **1/3**
Final **2/3**

Prepared and Designed by: **PROF. LESTER L. DELA CRUZ**
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