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Jindal Global Business School  
*Course Outline*

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Course Title	Smart Grid Operations
Core or Elective	Elective
Program and Batch	MBA-2, IBM-4, IBM-5
Semester & Academic Year	Spring 2026
Credits	1.5
Discipline/Area	Operations Management & Supply Chain
Name of the Faculty Member/Course Instructor	Archana
Contact Details of the Faculty Member	archana@jgu.edu.in
Contact Details of Support Staff	jgbs-co@jgu.edu.in
Faculty Member's Open Office Day/s & Time	To be Communicated

### Introduction to the Course

Smart grid is an advanced electricity network to monitor and manage the transport of electricity from all generation sources to meet the varying electricity demands of end users. The smart grid is an enhancement of the 20th century electrical grid, using two-way communications and distributed energy resources. Understanding the different features of smart grid requires basic understanding of electric grid, energy markets, business strategies, and energy related policies and regulation. Aim of this course is to provide an inter-disciplinary overview of smart grid, starting from fundamentals of smart grid to renewable energy systems, energy storage, cyber-security, load forecasting and consumers behaviours. It familiarizes the students with different concepts and developments in smart grid technology to expand their knowledge and practical skills to meet the current market demand. This course will serve as a foundation for students to develop new thinking and design methodologies necessary for the transformation of existing power system to intelligent networks.

### Course Learning Objectives

At the end of the course, students should be able to

1. CLO1- To understand the elements of smart grid, its importance for sustainability in energy sector and visualise the roadmap towards next generation electric grid.
2. CLO2 – Analyse the energy sector environment using theoretical concepts and assess technology options related to renewable resources, data handling, energy storage and cyber security. Students will be able to make an independent assessment business decision or tactics used by energy industry.
3. CLO3 – Provide necessary skills for identifying contemporary challenges, marketing problems and propose effective solutions for energy sector. Participants should understand the importance of smart grid projects and be able to develop ways to evaluate their impacts and implications.
4. CLO4 – To analyse the changed roles of utilities and consumers and develop logical thinking and problem-solving skills for real world.

### Programme Competency Goals

MBA Programme Competency Goals (PCGs)		MBA Programme Learning Objectives (PLOs)
		Students will be able to
1	<b>Technological Agility:</b> Ability to adopt relevant technologies for better business decision making.	1. Understand relevant business technologies
		2. Understand future technologies in business domain
2	<b>Responsible Global Citizenship:</b> Ability to understand the interplay between local and global issues and to act with sensitivity towards ethical and social issues	3. Understand the interplay between local and global business issues
		4. Demonstrate sensitivity towards ethical issues
		5. Demonstrate sensitivity towards social issues
		6. Address societal issues
3	<b>Effective communication:</b> Ability to effectively exchange ideas and information	7. Present their ideas with clarity
		8. Prepare an organized and logical business document
		9. Use technology for effective communication
4	<b>Critical Thinking:</b> Ability to identify, analyze business problems and propose effective solutions	10. Identify main issues of business problems
		11. Examine information from different sources
		12. Draw inferences from analysis
		13. Evaluate alternatives
		14. Summarize and conclude
5		15. Take initiative

	<b>Leadership:</b> Ability to take initiative, inspire and collaborate with others	16. Contribute effectively in groups
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### PLO-PCG Assessments Mapping Matrix

Program Learning Objectives (PLOs)	Program Competency Goals (PCGs)	Course Assessment Item
This course helps you to develop the following Program Learning Outcomes:	This course helps you to develop the following Program Competency Goals:	This learning outcome will be assessed in the following items
PLO1, PLO2	PCG1	A1, A2, A3
PLO1, PLO2, PLO10, PLO11, PLO12	PCG1, PCG4	A1, A2, A3, A4
PLO1, PLO2, PLO10, PLO11, PLO12	PCG1, PCG4, PCG6	A1, A2, A3, A4

### Evaluation Schema

The course grade will be determined based on:

Assessment Task	Weightage (Percentage)	Nature (Individual/Group)	Week of Assessment	PLOs to be Assessed
A1: Class Participation	10 %	Individual	3 <sup>rd</sup> Week	PCG2- PLO1 & PLO2 PCG3- PLO1
A2: Quiz 2	20 %	Individual	5 <sup>th</sup> Week	PCG2- PLO1 & PLO2 PCG3- PLO1
A3: Case study Presentation	40 %	Group	8 <sup>th</sup> Week	PLO1, PLO2, PLO5, PLO6, PLO7, PLO8, PLO9, PLO10, PLO11, PLO12, PLO13, PLO14, PLO15, PLO16
A4: End term Examination	30%	Individual	In Examination Week	PLO1, PLO2, PLO10, PLO11, PLO12

### Description of Assessments:

**A1- Class Participation (10%)** - The participation of the students in class discussions, guest lectures, and experiential learning sessions shall be evaluated out of 10 marks.

**A2- (Quiz, 10 + 10 = 20%)** – These will be two multi choice questions quiz to assess students’ ability to understand conceptually and syntactically the critical concepts discussed in the class.

**A3- (Case study Presentation, 40%)** - You are expected to carefully analyse a case study and present your findings in a power-point format. The presentation must carry a thorough problem identification, analysis, and recommendation (probable solution, and action plan).

**A4-(End term examination, 30%)** – The end term examination will be of 30 marks of 3 hours duration. This will be an invigilated exam held on the JGU campus according to the mode decided by CoE.

## Rubrics for Assessments

### Grading Rubrics for Case Presentation

Criteria	10 – Outstanding	9 – Proficient	8 – Basic	7 (or lower) - Below Expectations
<b>OBJECTIVE</b>				
<b>Completed homework as per requirements</b>	All portions of the assignment, including presentations, and report were attempted and submitted.			
<b>Uniqueness of Case</b>	<ul style="list-style-type: none"> <li>The case study chosen or used is appropriate.</li> <li>Discussed all important aspects of the background of case.</li> </ul>	<ul style="list-style-type: none"> <li>Case is appropriate, but minor issues may be present.</li> <li>Discussed most important aspect of the case.</li> </ul>	<ul style="list-style-type: none"> <li>Case is not much related with the topic being explored.</li> <li>Discussed some of the important aspect of the background.</li> </ul>	<ul style="list-style-type: none"> <li>Case has little or no relation to the topic being explored.</li> <li>Discusses few important aspects of the background of the case.</li> </ul>
<b>Analysis/ Solution Options</b>	<ul style="list-style-type: none"> <li>Case discusses an in-depth and critical assessment of the facts of the case in relation to available research</li> </ul>	<ul style="list-style-type: none"> <li>Case discusses a mostly thorough assessment of the facts of the case in relation to available research •</li> </ul>	<ul style="list-style-type: none"> <li>Case discusses a somewhat thorough assessment of the facts of the case in relation to available research</li> </ul>	<ul style="list-style-type: none"> <li>Case discusses a sparse assessment of the facts of the case, and some are not based on available research</li> </ul>
<b>Recommendations/ Final Plan Implementation</b>	<ul style="list-style-type: none"> <li>Case proposes a detailed action plan of final recommendations</li> <li>Conclusion justifies final decisions with specific evidence.</li> </ul>	<ul style="list-style-type: none"> <li>Case proposes an action plan of final recommendations</li> <li>Conclusion justifies some final decisions with specific evidence</li> </ul>	<ul style="list-style-type: none"> <li>Case proposes a limited action plan of final recommendations •</li> <li>Conclusion justifies some final decisions with specific evidence</li> </ul>	<ul style="list-style-type: none"> <li>Case proposes a limited action plan of final recommendations</li> <li>Conclusion justifies few decisions with specific evidence</li> </ul>
<b>Conclusions/ Outcomes of Case</b>	<ul style="list-style-type: none"> <li>Case provides a detailed description of the outcomes</li> <li>Case provides detailed and appropriate conclusions.</li> </ul>	<ul style="list-style-type: none"> <li>Case provides a clear description of the outcomes.</li> <li>Case provides appropriate conclusions.</li> </ul>	<ul style="list-style-type: none"> <li>Case provides an adequate description of the outcomes.</li> <li>Case provides adequate and mostly appropriate conclusions</li> </ul>	<ul style="list-style-type: none"> <li>Case provides a limited description of the outcomes.</li> <li>Conclusion provides limited and somewhat appropriate conclusions.</li> </ul>
<b>SUBJECTIVE</b>				

## Grading Rubrics for Case Presentation

Criteria	10 – Outstanding	9 – Proficient	8 – Basic	7 (or lower) - Below Expectations
Theoretical understanding (Judged through Q/A)	A proper understanding of the concepts and ability to confidently answer the questions correctly	A good understanding of the concepts and inability to provide to-the-point answers to questions	A basic understanding of the concepts and inability to provide to-the-point answers to questions	Very nascent understanding of the concepts and tendency to avoid questions

## Teaching Method

The course will have a judicious mix of lectures, storytelling, experiential exercises, and cases. Here the onus of learning will be with the student, and the instructor will be a facilitator. Instead of learning ‘what to do’, the cases will also be used as examples of real-world phenomena where issues arise, and good and bad practices are seen. The key to learning this way is to see many examples and situations and learn inductive as well as deductive ways from students’ and managers’ different experiences.

## Textbook / Other Readings

### Textbook:

1. Hongjian Sun, Nikos Hatziaargyrio, H. Vincent Poor, Laurence Carpanini, Miguel Angel Sanchez Fornie; “Smarter Energy: From Smart Metering to the Smart Grid”- The Institute of Engineering and Technology, 2016
2. Bernd M. Buchholz, Zbigniew Styczynski; “Smart Grids – Fundamentals and Technologies in Electricity Networks”, Springer, 2014
3. Kenneth C. Bdkka, Jayant G. Deshpande, Marina Thottan; “Communication Network for Smart Grids: Making Smart Grid Real”; Springer, 2014
4. Salman K. Salman; “Introduction to the Smart Grid: Concepts, Technologies and Evolution”; The Institution of Engineering and Technology, 2017
5. CW Gellings, “The Smart Grid, Enabling Energy Efficiency and Demand Side Response”- CRC Press, 2009.

### Other readings

1. S.E. Collier, Ten Steps to a Smarter Grid, IEEE Industry Applications Magazine, Volume: 16, Issue: 2, 2010, pp. 62-68
2. G.W. Arnold, “Challenges and Opportunities in Smart Grid: A Position Article”, Proceedings of the IEEE, Volume: 99, Issue: 6, 2011, pp. 922-927

## Session Plan

Session Details	Topics	PLOs Covered
<b>Session 1</b>	Introduction to Smart Grid Technology	PLO1, PLO2
Objective of the session	After the successful completion of this session, students should be able to understand:	

	Smart grid definition, introduction and importance	
Subtopics to be covered	Overview of Electric grid,	
Readings	<ol style="list-style-type: none"> <li>1. Buchholz, B. M., &amp; Styczynski, Z. (2014). <i>Smart Grids-fundamentals and technologies in electricity networks</i> (Vol. 396). Heidelberg: Springer.</li> <li>2. Bayindir, R., Colak, I., Fulli, G., &amp; Demirtas, K. (2016). Smart grid technologies and applications. <i>Renewable and sustainable energy reviews</i>, 66, 499-516.</li> <li>3. Sakib, S. N., Matin, N., Siam, A., Ferdous, Q. A., &amp; Rahman, N. (2016, January). Necessity, challenges and development opportunities of smart grid technology in perspective of Bangladesh. In <i>2016 Biennial International Conference on Power and Energy Systems: Towards Sustainable Energy (PESTSE)</i> (pp. 1-6). IEEE.</li> </ol>	
Case Title & Number	NA	
Pedagogy	Lecture and discussion	
<b>Session 2</b>	Electricity Network Operations and Energy Supply Chain	PLO1, PLO2
Objective of the session	This session examines how electricity networks operate and how the energy supply chain ensures reliable power delivery. It also looks at emerging challenges and innovations shaping efficiency and sustainability.	
Subtopics to be covered	Electricity network operations and grid management Energy supply chain: from generation to consumption	
Readings	<ol style="list-style-type: none"> <li>1. Wee, H. M., Yang, W. H., Chou, C. W., &amp; Padilan, M. V. (2012). Renewable energy supply chains, performance, application barriers, and strategies for further development. <i>Renewable and Sustainable Energy Reviews</i>, 16(8), 5451-5465.</li> <li>2. Fontes, C. H. D. O., &amp; Freires, F. G. M. (2018). Sustainable and renewable energy supply chain: A system dynamics overview. <i>Renewable and Sustainable Energy Reviews</i>, 82, 247-259.</li> </ol>	
Case Title & Number	NA	
Pedagogy	Lecture and discussion	
<b>Session 3</b>	Energy Management by System Operators -1	PLO1, PLO2
Objective of the session	To understand the role of system operators in managing energy flows and ensuring grid stability.	
Subtopics to be covered	Peak Load Management, Demand Response, Consumer Engagement	
Readings	<ol style="list-style-type: none"> <li>1. Silva, B. N., Khan, M., &amp; Han, K. (2020). Futuristic sustainable energy management in smart environments: A review of peak load shaving and demand response strategies, challenges, and opportunities. <i>Sustainability</i>, 12(14), 5561.</li> <li>2. Thakur, J., &amp; Chakraborty, B. (2016). Demand side</li> </ol>	

	<p>management in developing nations: A mitigating tool for energy imbalance and peak load management. <i>Energy</i>, 114, 895-912.</p> <p>3. Yilmaz, S., Rinaldi, A., &amp; Patel, M. K. (2020). DSM interactions: What is the impact of appliance energy efficiency measures on the demand response (peak load management)? <i>Energy Policy</i>, 139, 111323.</p>	
Case Title & Number	NA	
Pedagogy	Lecture and discussion	
Session 4	Energy Management by System Operators -2	PLO1, PLO2
Objective of the session	The session emphasizes strategies for optimizing efficiency, reliability, and integration of diverse energy sources.	
Subtopics to be covered	Loss Reduction, Asset Monitoring	
Readings	<p>1. Bendato, I., Bonfiglio, A., Brignone, M., Delfino, F., Pampararo, F., &amp; Procopio, R. (2017). A real-time Energy Management System for the integration of economical aspects and system operator requirements: Definition and validation. <i>Renewable energy</i>, 102, 406-416.</p> <p>2. Yan, Z., Gao, Z., Navesi, R. B., Jadidoleslam, M., &amp; Pirouzi, A. (2023). Smart distribution network operation based on energy management system considering economic-technical goals of network operator. <i>Energy Reports</i>, 9, 4466-4477.</p>	
Case Title & Number	NA	
Pedagogy	Lecture and discussion	
Session 5	Energy Management by System Operators -3	PLO1, PLO2
Objective of the session	The session emphasizes strategies for optimizing efficiency, reliability, and integration of diverse energy sources.	
Subtopics to be covered	Outage management system	
Readings	<p>1. Tram, H. (2008, April). Technical and operation considerations in using smart metering for outage management. In <i>2008 IEEE/PES Transmission and Distribution Conference and Exposition</i> (pp. 1-3). IEEE.</p> <p>2. Farzin, H., Fotuhi-Firuzabad, M., &amp; Moeini-Aghaie, M. (2017). Role of outage management strategy in reliability performance of multi-microgrid distribution systems. <i>IEEE Transactions on Power Systems</i>, 33(3), 2359-2369.</p> <p>3. Kenosi, K., Ravi, S., Rohini, R., &amp; Annapoorani, K. I. (2019). Development of an Outage Management System for Power Distribution Networks. <i>International Journal of Simulation--Systems, Science &amp; Technology</i>, 20(2).</p>	
Case Title & Number	NA	
Pedagogy	Lecture and discussion	

Session 6	Renewable Resources Integration and challenges	PLO1, PLO2
Objective of the session	To explore how renewable energy sources are integrated into existing power systems and identify the key technical, operational, and policy challenges involved. The session focuses on ensuring reliability while advancing sustainability goals.	
Subtopics to be covered	Integration of renewable resources into electricity networks Challenges of variability, storage, and grid stability	
Readings	1. Phuangpornpitak, N., & Tia, S. (2013). Opportunities and challenges of integrating renewable energy in smart grid system. <i>Energy Procedia</i> , 34, 282-290. 2. Rehmani, M. H., Reisslein, M., Rachedi, A., Erol-Kantarci, M., & Radenkovic, M. (2018). Integrating renewable energy resources into the smart grid: Recent developments in information and communication technologies. <i>IEEE Transactions on Industrial Informatics</i> , 14(7), 2814-2825. 3. Eltigani, D., & Masri, S. (2015). Challenges of integrating renewable energy sources to smart grids: A review. <i>Renewable and Sustainable Energy Reviews</i> , 52, 770-780.	
Case Title & Number	NA	
Pedagogy	Lecture and discussion	
Session 7	Tariffs Determination and Load Forecasting	PLO1, PLO2
Objective of the session	To understand the principles of electricity tariff determination and the importance of load forecasting in ensuring economic efficiency and reliable power supply.	
Subtopics to be covered	Scheduling of Power	
Readings	1. Yang, S. L., & Shen, C. (2013). A review of electric load classification in smart grid environment. <i>Renewable and sustainable energy reviews</i> , 24, 103-110. 2. Khan, A. R., Mahmood, A., Safdar, A., Khan, Z. A., & Khan, N. A. (2016). Load forecasting, dynamic pricing and DSM in smart grid: A review. <i>Renewable and Sustainable Energy Reviews</i> , 54, 1311-1322. 3. Zahid, M., Ahmed, F., Javaid, N., Abbasi, R. A., Zainab Kazmi, H. S., Javaid, A., ... & Ilahi, M. (2019). Electricity price and load forecasting using enhanced convolutional neural network and enhanced support vector regression in smart grids. <i>Electronics</i> , 8(2), 122. 4. Yang, H., Zhang, J., Qiu, J., Zhang, S., Lai, M., & Dong, Z. Y. (2016). A practical pricing approach to smart grid demand response based on load classification. <i>IEEE Transactions on Smart Grid</i> , 9(1), 179-190. 5. Motamedi, A., Zareipour, H., & Rosehart, W. D. (2012). Electricity price and demand forecasting in smart grids. <i>IEEE</i>	



	Transactions on Smart Grid, 3(2), 664-674.	
Case Title & Number	NA	
Pedagogy	Lecture and discussion	
Session 8	Energy Markets in India	PLO1, PLO2
Objective of the session	To provide an overview of the structure and functioning of energy markets in India, with a focus on trading mechanisms, regulatory frameworks, and emerging opportunities.	
Subtopics to be covered	Structure and functioning of Indian energy markets Regulatory frameworks and future market trends	
Readings	1. Mousavi, F., Nazari-Heris, M., Mohammadi-Ivatloo, B., & Asadi, S. (2021). Energy market fundamentals and overview. In <i>Energy storage in energy markets</i> (pp. 1-21). Academic Press. 2. Bhattacharyya, S. C. (2019). <i>Energy economics: concepts, issues, markets and governance</i> . Springer Nature. 3. Gabriel, S. A., Conejo, A. J., Fuller, J. D., Hobbs, B. F., & Ruiz, C. (2012). <i>Complementarity modeling in energy markets</i> (Vol. 180). Springer Science & Business Media. 4. Lund, H., Andersen, A. N., Østergaard, P. A., Mathiesen, B. V., & Connolly, D. (2012). From electricity smart grids to smart energy systems—a market operation based approach and understanding. <i>Energy</i> , 42(1), 96-102. 5. Romere, B. P. (2002). Energy policy basics. <i>Journal of Petroleum Technology</i> , 54(04), 14-14. 6. Mengelkamp, E., Notheisen, B., Beer, C., Dauer, D., & Weinhardt, C. (2018). A blockchain-based smart grid: towards sustainable local energy markets. <i>Computer Science-Research and Development</i> , 33, 207-214. 7. Ilo, A. (2019). Design of the smart grid architecture according to fractal principles and the basics of corresponding market structure. <i>Energies</i> , 12(21), 4153.	
Case Title & Number	NA	
Pedagogy	Lecture and discussion	
Session 9	Guest Lecture (Dr. Prabhat Shankar, ABB Bangalore)	PLO1, PLO2
Objective of the session	Provide students with insights into how theory is applied in practice, and how to connect their learning to the real world	
Subtopics to be covered	NA	
Readings	NA	
Case Title & Number	NA	
Pedagogy	Lecture and discussion	
Session 10	Energy Storage System	PLO1, PLO2, PLO17
Objective of the session	To examine the role of energy storage systems in enhancing grid reliability, managing demand fluctuations, and	

	supporting renewable integration.	
Subtopics to be covered	Electric vehicle, Storage system	
Readings	<ol style="list-style-type: none"> <li>1. Ibrahim, H., Ilinca, A., &amp; Perron, J. (2008). Energy storage systems—Characteristics and comparisons. <i>Renewable and sustainable energy reviews</i>, 12(5), 1221-1250.</li> <li>2. Zhang, C., Wei, Y. L., Cao, P. F., &amp; Lin, M. C. (2018). Energy storage system: Current studies on batteries and power condition system. <i>Renewable and Sustainable Energy Reviews</i>, 82, 3091-3106.</li> <li>3. Mitali, J., Dhinakaran, S., &amp; Mohamad, A. A. (2022). Energy storage systems: A review. <i>Energy Storage and Saving</i>, 1(3), 166-216.</li> <li>4. Komarnicki, P., Lombardi, P., Styczynski, Z., Komarnicki, P., Lombardi, P., &amp; Styczynski, Z. (2017). <i>Electric energy storage system</i> (pp. 37-95). Springer Berlin Heidelberg.</li> <li>5. Olabi, A. G. (2017). Renewable energy and energy storage systems. <i>Energy</i>, 136, 1-6.</li> <li>6. Abdi, H., Mohammadi-ivatloo, B., Javadi, S., Khodaei, A. R., &amp; Dehnavi, E. (2017). Energy storage systems. <i>Distributed generation systems</i>, 7, 333-368.</li> </ol>	
Case Title & Number	NA	
Pedagogy	Lecture and discussion	
<b>Session 11</b>	Cyber Security Management in Power Sector	PLO1, PLO2
Objective of the session	To understand the importance of cybersecurity in safeguarding power sector infrastructure against evolving digital threats.	
Subtopics to be covered	<p>Cyber threats, vulnerabilities, and risk management in the power sector</p> <p>Strategies for resilience, compliance, and incident response</p>	
Readings	<ol style="list-style-type: none"> <li>1. Pallotti, E., &amp; Mangiatordi, F. (2011, May). Smart grid cyber security requirements. In <i>2011 10th International conference on environment and electrical engineering</i> (pp. 1-4). IEEE.</li> <li>2. Flick, T., &amp; Morehouse, J. (2011). Attacking Smart Meters. <i>Securing the Smart Grid: Next Generation Power Grid Security</i>. Boston: Syngress, 211-232.</li> <li>3. Knowles, W., Prince, D., Hutchison, D., Disso, J. F. P., &amp; Jones, K. (2015). A survey of cyber security management in industrial control systems. <i>International journal of critical infrastructure protection</i>, 9, 52-80.</li> <li>4. Moustafa, A. A., &amp; Bello, A. (2021). The role of user behaviour in improving cyber security management. <i>Frontiers in Psychology</i>, 12, 561011.</li> <li>5. Jenab, K., &amp; Moslehpour, S. (2016). Cyber Security Management: A Review. <i>Business Management Dynamics</i>, 5(11).</li> <li>6. Lackner, M., Markl, E., &amp; Aburaia, M. (2018). Cybersecurity</li> </ol>	

	management for (industrial) internet of things—challenges and opportunities. <i>Journal of Information Technology &amp; Software Engineering</i> , 8(05).	
Case Title & Number	NA	
Pedagogy	Lecture and discussion	
<b>Session 12</b>	Power Exchange and Power Purchase agreement	PLO1, PLO2
Objective of the session	To explore the functioning of power exchanges and the role of power purchase agreements (PPAs) in ensuring reliable, cost-effective electricity procurement.	
Subtopics to be covered	Structure and operations of power exchanges Power purchase agreements: types, design, and significance	
Readings	<ol style="list-style-type: none"> <li>Hundt, S., Jahnel, J., &amp; Horsch, A. (2021). Power purchase agreements and financing renewables: An interdependency. <i>Journal of Structured Finance</i>, 27(1), 35-50.</li> <li>Wallace, P. (2019). Long-term power purchase agreements: The factors that influence contract design. In <i>Research Handbook on International and Comparative Sale of Goods Law</i> (pp. 305-333). Edward Elgar Publishing.</li> <li>Mendicino, L., Menniti, D., Pinnarelli, A., &amp; Sorrentino, N. (2019). Corporate power purchase agreement: Formulation of the related levelized cost of energy and its application to a real life case study. <i>Applied Energy</i>, 253, 113577.</li> <li>Slotwiński, S. (2022). The Significance of the “Power Purchase Agreement” for the Development of Local Energy Markets in the Theoretical Perspective of Polish Legal Conditions. <i>Energies</i>, 15(18), 6691.</li> <li>Huneke, F., Göß, S., Österreicher, J., &amp; Dahroug, O. (2018). Power purchase agreements: financial model for renewable energies. <i>Energy Brainpool White Paper</i>.</li> <li>Harada, L. N., &amp; Coussi, M. (2020). Power purchase agreements: An emerging tool at the centre of the European energy transition a focus on France. <i>European Energy and Environmental Law Review</i>, 29(5).</li> <li>Barat, D. (2023). 'Virtual'Power Purchase Agreements: Legal Status and Regulatory Framework in India. <i>J. on Governance</i>, 6, 27.</li> </ol>	
Case Title & Number	NA	
Pedagogy	Lecture and discussion	
<b>Session 13</b>	Supplier Relationship Management with Advanced Technologies in Power Sector	PLO1, PLO2, PLO10, PLO11, PLO12, PLO13, PLO14
Objective of the session	To examine how advanced technologies transform supplier relationship management in the power sector, enabling efficiency, transparency, and collaboration.	
Subtopics to be covered	Role of digital platforms, AI, and blockchain in supplier	

	relationship management Strategies for building resilient and collaborative supplier networks in the power sector	
Readings	<ol style="list-style-type: none"> <li>1. Lukić, J., Radenković, M., Despotović-Zrakić, M., Labus, A., &amp; Bogdanović, Z. (2017). Supply chain intelligence for electricity markets: A smart grid perspective. <i>Information Systems Frontiers</i>, 19, 91-107.</li> <li>2. Teng, Y., Wang, J., &amp; Wang, R. (2021, October). Supplier evaluation of smart grid material suppliers based on big data environment and AHP. In <i>2021 3rd International Conference on Artificial Intelligence and Advanced Manufacture</i> (pp. 628-634).</li> <li>3. Worighi, I., &amp; Maach, A. (2018, April). Virtualization of the smart grid using entity/relation model. In <i>2018 International Conference on Advanced Communication Technologies and Networking (CommNet)</i> (pp. 1-9). IEEE.</li> <li>4. Worighi, I., &amp; Maach, A. (2018, April). Virtualization of the smart grid using entity/relation model. In <i>2018 International Conference on Advanced Communication Technologies and Networking (CommNet)</i> (pp. 1-9). IEEE.</li> <li>5. Le Ray, G., &amp; Pinson, P. (2020). The ethical smart grid: Enabling a fruitful and long-lasting relationship between utilities and customers. <i>Energy Policy</i>, 140, 111258.</li> </ol>	
Case Title & Number	NA	
Pedagogy	Lecture and discussion	
<b>Session 14</b>	Reading & Revision Week/ Examination Week*	
Objective of the session	NA	
Subtopics to be covered	NA	
Readings	NA	
Case Title & Number	NA	
Pedagogy	NA	
<b>Session 15</b>	Reading & Revision Week/ Examination Week*	
Objective of the session	NA	
Subtopics to be covered	NA	
Readings	NA	
Case Title & Number	NA	
Pedagogy	NA	

\*Elective End term Examinations may take place in the last week of classes

## Disability Support

JGU endeavours to make all its courses accessible to students. The Disability Support Committee (DSC) has identified conditions that could hinder a student's overall wellbeing. These include physical and mobility-related difficulties, visual impairment, hearing impairment, mental health conditions, and intellectual/learning difficulties, e.g., dyslexia and dyscalculia. Students with any known disability needing academic and other

support are required to register with the Disability Support Committee (DSC) by following the procedure specified at <https://jgu.edu.in/disability-support-committee/>

Students who need support may register any time during the semester up until a month before the end semester exam begins. Those students who wish to continue receiving support from the previous semester, must re-register within the first month of a semester. Last-minute registrations and support might not be possible as sufficient time is required to make the arrangements for support.

The DSC maintains strict confidentiality about the identity of the student and the nature of their disability and the same is requested from faculty members and staff as well. The DSC takes a strong stance against in-class and out-of-class references made about a student's disability without their consent and disrespectful comments referring to a student's disability.

All general queries are to be addressed to [disabilitysupportcommittee@jgu.edu.in](mailto:disabilitysupportcommittee@jgu.edu.in)