IEEE Launches Certification for the Wireless Engineer

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Topics Covered

- **Industry Trends: Demonstrating a Market Need for Both Engineers & Industry**
- **About WCET Certification**
- **Benefits for Engineers & Employers**
- **Program Development & Review**
- **Focus Group and Industry Survey Feedback**
- **Subject Areas Covered**
- **Resources**
- **Exam Dates & Locations**

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CERTIFICATION

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Industry Trends

- **2.6 billion mobile phone users worldwide today**
  - vs. 1.3 billion fixed landline phones
  - vs. 1.5 billion TV sets in use
- **Expected to grow to 4.1 billion by 2014**
- **37% increase in users over next 6 years**

Source: Telecom Trends International Inc. (February 2008)

- **Worldwide RFID revenues estimated to reach $1.2 billion in 2008**
  - 31% increase over 2007 revenues
  - Estimated to reach $3.5 billion by 2012

Source: Gartner Research Firm report cited in RFID World February 26, 2008

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Industry Trends

- Wireless/Satellite Communications highlighted as an area that will see explosive growth over the next decade

Source: GOLDSEA Asian American Daily Career Report (2007)

- *"Rapid growth in RF product development should result in opportunities for experienced individuals that have hands-on experience developing products. All indicators point to continuing strong requirements for RF engineers that are keeping their skills current."*

"Employment of RF engineers is expected to increase much faster than the average for most non-engineering and engineering occupations - as companies continue to adopt and integrate new technologies."

Source: EngineerSalary.com

About WCET Certification

- **Created by the IEEE Communications Society to:**
  - Address the continuing education needs of wireless communications engineers
  - Help meet the wireless industry's need for qualified engineers
- **IEEE WCET Certification effectively measures skills and knowledge used in contemporary practice**

Who Qualifies?

- **IEEE WCET Certification is primarily designed for engineers who:**
  - Hold a bachelor's degree from an accredited institution
  - Have at least three years of wireless engineering experience
- **Can also help those working in other engineering areas make a switch to the wireless field**

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Development & Review

- **Multiple groups of wireless professionals have overseen the development and review of the WCET Certification Program**
  - **Practice Analysis Task Force (PATF)**
  - **Industry Advisory Board (IAB)**
  - **Question writers & Exam Creation**
  - **Candidate's Handbook**
  - **Training guidelines**
  - **Marketing**
  - **IT (registration, exam distribution, records)**
- **Over 100 industry experts have actively contributed**
- **Over 1,300 have reviewed and validated the description of wireless engineering practice**

How Does This Help You?

IEEE WCET Certification is based on technology and applications and NOT a specific company's approach

Certified engineers have demonstrated a thorough understanding of:

- **Different key technologies in the wireless arena**
- **Local market implications of wireless communications**
- **New technology & standards development**

AND…

- **Have more job opportunities**
- **Are eligible for better compensation**
- **Enjoy easier workforce mobility**

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Benefits for Employers

With IEEE WCET Certified Engineers, employers or future employers can easily:

- Identify properly skilled and qualified engineers for wireless engineering assignments
- Screen potential job candidates/applicants
- Assess their suitability to meet specific needs

For Employers, the IEEE WCET Certification:

- Creates a standard for the industry as to what is expected from a certified wireless professional
- Reduces the amount of in-house training an organization may need to develop for their engineers, saving them...

Time - Money - Resource Allocations

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Industry Advisory Board

- **Senior level executives of wireless communications engineering technology companies**
- **All major industry sectors represented**
  - **Carriers & Service Providers**
  - **Manufacturers**
  - **Security & Public Safety**
  - **Enterprises/Users**
  - **Government (including Regulatory)**
  - **Consultants**
- **Provide guidance to the Steering Committee, which oversees day-to-day operations**

Industry Advisory Board

Adam Drobot
- Telcordia Technologies

Javan Erfanian
- Bell Mobility, Bell Canada

Ron Webb
- Nokia

Byung K. Yi
- LG Electronics

Huang Hua
- Huawei

Ron Jost
- US DoD NII

Francis E. O'Brien
- Alcatel-Lucent

Luis Jorge Romero
- Telefonica

Arun Pande
- Tata Consulting Services

Rémi Thomas
- Orange France Telecom

The WCET Program

- **Customers: Potential Certificate holders and the companies that employ them.**

- **Demographic: the 3+ year engineering practitioner, with a degree in EE or a related discipline.**

Steering Committee & Industry Advisory Board — Provide Input, Guidance, & Support

Exam Certification

Technical Experts Compile questions based on updated Delineation

Survey Validate Delineation by surveying >1,300 potential cert holders on their Core job function, based on Delineation

Focus Groups Review PATF Delineation

Independent Reviewers Review Delineation updated by Focus Groups

Practice Analysis Task Force (PATF) Develop Initial Draft Delineation

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Focus Group Feedback

"Excellent opportunity to provide a globally recognized certification that can be easily transported between employers for the benefit of the entire industry."

"Currently there is no base line for knowledge by wireless engineers. ... WCET Certification will help fill that gap."

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Focus Group Feedback

"Development of core competencies and testing/ certification would be very beneficial for employers and customers alike. This is especially true with increased complexities in technology and erosion of regulatory (FCC) licensing."

"WCET certification would be another asset and would help, for example, a technical manager to gather the right team."

Industry Survey Feedback

"A generic wireless certification is long overdue and the field of qualified individuals is very limited."

"Excellent opportunity to provide a globally recognised certification that can be easily transported between employers for the benefit of the entire industry."

"Great tool to assess up front the skill set of potential employees."

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Subject Areas Covered

The exam's 150 questions measure knowledge and skill in seven wireless communications areas:

- **RF Engineering, Propagation, and Antennas**
- **Wireless Access Technologies**
- **Network and Service Architecture**
- **Network Management and Security**
- **Facilities Infrastructure**
- **Agreements, Standards, Policies, and Regulations**
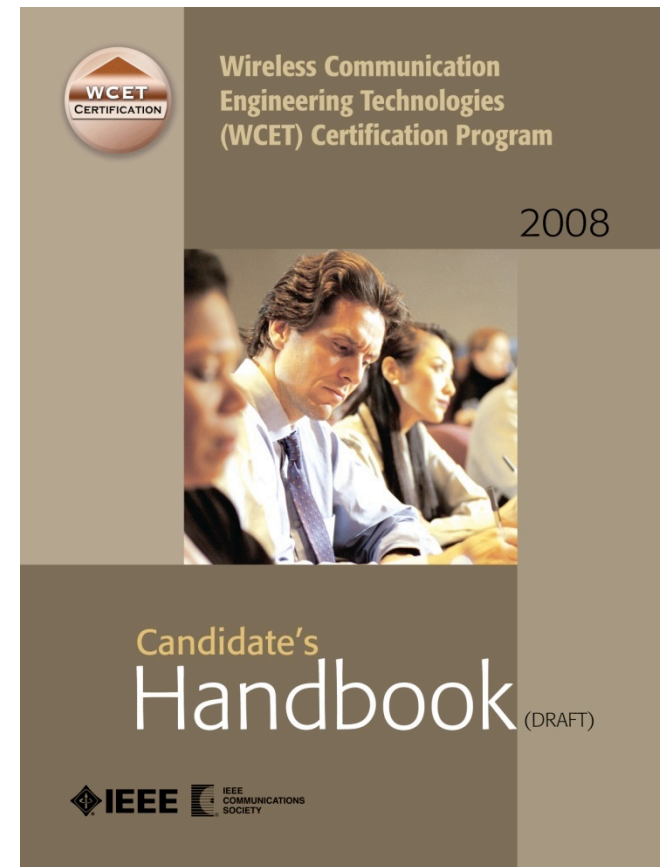- **Fundamental Knowledge**

Resources

- **FREE Candidate's Handbook**
  - To help you determine if getting IEEE WCET Certified is right for you
- **Provides insight on:**
  - Subject areas covered
  - Application procedures
  - Sample references
  - Sample questions
  - Contact information
- **Electronic copies available**
  - Visit **www.ieee-wcet.org** to download your copy

Resources

- Book: *"The Wireless Engineering Body of Knowledge"*
  - Your one-stop resource covering the subject area
  - Nine editors from all segments of the industry
  - Contributions from numerous selected experts
  - Each chapter is a high-level survey of a specific area and provides detailed references on the subject matter covered
  - Order your copy from the IEEE Communications Society or publisher John Wiley

- Practice Exams
  - Available at www.ieee-wcet.org
  - US$75.00 for one exam

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Resources

- **FREE: *Wireless Communication Newsletter***
  - Sign up by sending an email to **cert@comsoc.org**
  - Distributed monthly (starting Fall 2008)
  - Brings you news about wireless engineering issues and updates/information on WCET certification

- **Webinars**
  - Presented prior to exams
  - Presenters are book contributors, engineers and volunteers who were involved in both the exam and the development of the credential

Yearly Activities

▪ **Question Writing and Review**
  - Individual volunteers create questions with verifiable references pertaining to specific tasks or knowledge statements from the Delineation.
  - Group meetings are held to review each question, correct answer, and distracter answers for relevance and quality.

▪ **Exam Creation – Group meetings**
  - Each question is rated for difficulty and cognitive level
  - Exam forms are created according to the test specifications from the job analysis
  - Exams are created with assurance that the difficulty of the questions are similar from one form to another and that no questions provide the answer to any other question. Practice exams are created at the same time as the exam forms.
  - Score equating; Each exam form requires a separate base score based on question difficulty and question cognitive level

Exam Dates & Locations

- **Examinations:**
  - **Four-hour, 150-question multiple-choice exam**
  - **Given at secure computer-based test centers worldwide**
  - **Available at more than 500 testing sites located in 75 countries**
- **You arrange a specific exam appointment time during the exam window dates**
- **Visit www.ieee-wcet.org for:**
  - **Dates of upcoming exams**
    - **Sping 2009 = March 16 –April 4**
  - **Full list of test site addresses**

More WCET Information

- **IEEE WCET Certification Program fees:**
  - US$500 for non-IEEE members
  - US$450 for IEEE members
- **IEEE WCET Certification**
  - www.ieee-wcet.org
- **IEEE Communications Society**
  - www.comsoc.org

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The Future

Where do we go from here....

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Wireless Certifications

- **WCET Continues**
  - **Building new exam questions every 6 months**
  - **Updating WEBOK every 2 years**
  - **Rolling members off IAB early**
  - **Updating supporting systems; Training Guidelines, website, marketing materials every 6-12 months**
  - **Update IEEE BMS with at least the successful candidate information**
  - **Decide upon & implement longer term registration mechanisms**
  - **Continue to evaluate policies & strategies**
  - **Create & implement recertification notification system**

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New Certifications

- **Specialized certification in one or more areas of wireless**
  - **Target wireless areas which require greater technical knowledge**
  - **Propose September 2009 announcement date**
  - **Delineation creation process starting early 2009**

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Broadband

- **New certification on Broadband Communications**
  - **Build certification according to model created during WCET**
  - **Recruit core volunteers by December 2008**
  - **Delineation creation early 2009**
  - **Announce New Certification end of 2009 with target release in September 2010**

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How to participate

- **Visit www.ieee-wcet.org**
  - **See "How You Can Help**
- Send email to Jean Niblett
  - WCET certification project manager
  - j.niblett@comsoc.org